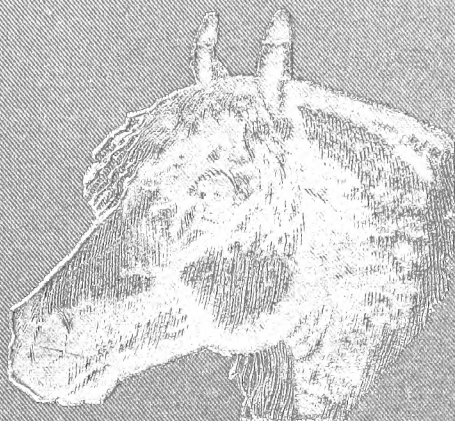


HORSES:
THEIR FEED *←
AND
→* **THEIR FEET.**



A MANUAL OF
HORSE HYGIENE.

NEW YORK:
FOWLER & WELLS, PUBLISHERS,
753 BROADWAY.

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HORSES:

THEIR FEED AND THEIR FEET.

A

MANUAL OF HORSE HYGIENE,

INVALUABLE FOR THE

VETERAN OR THE NOVICE;

POINTING OUT THE TRUE SOURCE OF "MALARIA," "DISEASE WAVES,"
INFLUENZA, GLANDERS, "PINK-EYE," ETC.,

AND HOW TO PREVENT AND COUNTERACT THEM.

BY

^{Charles}
C. E. PAGE, M.D.,

Author of "How to Feed the Baby," "Natural Cure of Consumption," etc.

WITH TREATISE AND NOTES ON SHOEING,

BY

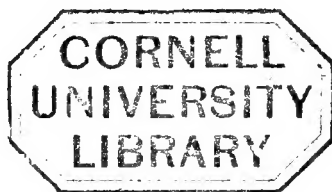
SIR GEORGE COX AND COL. M. C. WELD.

SECOND EDITION, REVISED AND ENLARGED.

NEW YORK:

FOWLER & WELLS, PUBLISHERS,

753 BROADWAY.



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EDWARD O. JENKINS,
Printer and Stereotyper,
20 North William Street, New York.

TO
THE "MERCIFUL MAN"
WHO WOULD
SACRIFICE EVEN HIS PREJUDICES
FOR
HIS HORSE'S GOOD
AND
HIS OWN.

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PREFACE.

THROUGH many years' acquaintance with the disorders of man and beast, I have learned the principal cause of abnormal conditions. To remove a cause is to provide the sovereign remedy. The "medicine" is no less worthy of confidence because costing absolutely nothing and always at hand.

Instructions which are specially designed for the benefit of novices, will, of course, be recognized and, doubtless, approved of by the veterans who may chance to examine the work. Where the suggestions are evidently intended for the veterans themselves, being in direct opposition to prevailing practices, I trust that some will deem them at least worthy of consideration and trial.

One object of this work is to recommend a reformed system of feeding, calculated to conserve vital force at points where it is often expended in the most destructive manner, viz.: the digestive and excretory systems. If the digestive organs become diseased, the excretories are certain to be overtaxed, since it is their office to eliminate the foul products of indigestion, as well as the normal waste of the organism.

Although placing special stress upon the advantage of modifying the prevailing diet as to the number of meals, the author is far from asserting that this is imperatively necessary, providing that the total quantity is not excessive, and the feeding is so timed (or, upon occasion, omitted altogether, for a meal), that the horse is never fed when tired, nor put to work soon after eating. It is manifestly true that the oftener he is fed the more difficult it is to guard against the above evil. Having taken pains, as the reader will observe further on, to put himself in communication with a large number of horsemen, for the purpose of eliciting their views, and being desirous of still further acquaintance among the craft, the author ventures to request such readers as may feel so disposed to address him, giving—for or against—the result of their experience after a trial of the system recommended.

As stated in the opening paragraph, the chief aim in the author's mind is to prevent disease; hence such suggestions as occur relating to curative measures, are merely hints *en passant*, no pretence being made of classifying "diseases" or of prescribing specifics for their "cure." One thing, however, is certain, viz.: That *principle* of treatment which is best calculated to maintain health, is also best adapted to restore it.

CHARLES E. PAGE.

753 BROADWAY, NEW YORK, Aug. 15, 1883.

H O R S E S :

THEIR FEED AND THEIR FEET.

IN undertaking the congenial task of writing a short treatise on the horse, I have not in mind the consideration of all of his various ailments—the means, whether by drugging or what not, of “curing” him of his “diseases”—but rather having him, as we do, at the start, in health, I would endeavor to show how we may prevent disease. In a long experience, dating from early boyhood, when I thought, as most persons still think, that the principal, if not the only, thing is to feed high and often, I find that with horses as with men, more of them decline, become “seedy,” emaciated, and sorry sights to behold, from overfeeding, or, what is nearly the same thing, underworking, or from a combination of the two causes, than from any lack of food or care, as the term “care” is commonly interpreted.

Most persons love a horse, and I have seldom found an owner who would not go hungry rather than have his horse go without food. He will say, “I will feed my horse before I will myself,” and, in practice, too, will do it. To be sure, there is seldom any con-

flict between the two needs; we are all able to eat too much and too often, and incline to serve our animals in the same manner. These things we do, whatever else is sacrificed or neglected. Even "hard cases," men who have not the means to purchase a good animal—that is, a valuable one—and who consequently are seen driving rawny-boned, consumptive creatures, and win the name of starving them—even these, as I have found upon diligent inquiry, often take scrupulous care to feed three times a day, and to give their poor dyspeptic horses more food than they can possibly digest. They do this, all the more because appearances are against them, and if it does not come to their ears, they feel sure that their neighbors and all who pass or meet them on the road, are saying something about "post-meat."

If some gentlemen's driving-horses had more of this sort of diet—outdoor air and freedom from surfeit—they would not so soon fall into the hands of "five-dollar jockeys." How often our eyes are pained at the sight of what was once a horse to be proud of, and whose owner really delighted in him, dragging himself along, and looking as if it would be a mercy to end his life. His old owner speaks of the case sorrowfully, and says, "When I owned 'Jim' he never looked like that; he got all he could eat, and I never overworked him." He doesn't add the further fact that under his treatment the horse *begun* to decline, and at an age, too, when he should have been in his prime, and that he put him away in consequence! Although the horse has many advantages

over his owner, so far as he has less exciting causes of disease—still, as we all know, his disorders are of about the same nature, so far as they go. He has fewer diseases in number and frequency than we find in the human family; and this comparative exemption from disease bears a pretty close relation to the plainness of his diet.

In my recent work entitled “Natural Cure of Consumption,”* in which I discuss the advantages of *wheat meal*, unbolted and unsifted, over fine flour or any modification of it, in the treatment or prevention of dyspepsia—a disorder which is at the root of almost all the internal diseases of man and beast—I make use of the following language: “That most noble of all animals next to man,—and in some aspects far superior to him,—the horse, in his finest and most delicate state, finds a perfect food in the whole grain, chewing it himself. I may, in the minds of some, be weakening my argument by comparing the digestive apparatus of man with that of the horse, but I am desirous of impressing upon the minds of my readers the well-known but imperfectly considered fact, that our horse-fanciers,—who dote on their ten-thousand-dollar animals, and would feed them on the finest of flour, would place before them the most costly and complicated cooked dishes if it were desirable, or even not pernicious in a health point of view,—really keep their dearest pets

* “The Natural Cure of Consumption, Dyspepsia, Bright’s Disease, Rheumatism, etc.” pp. 275, \$1. New York: Fowler & Wells.

on *bread and water*; and that, because of this, and the absence of all the hot, stimulating articles, solid or fluid, indulged in by their owners, their regular and moderate diet of *uncooked* food, and their superior hygiene in certain essential matters, our horses are saved, in great measure, from becoming fat, sick, mean, wheezy, or dyspeptic, like their masters and mistresses—men, women, and children.”

And yet horses do, after all, fall prey to all these degraded conditions. In spite of the naturalness and wholesomeness of their diet, as to variety and quality, and in face of the most solicitous and painstaking care, we too often see them the subject of tedious and painful disorders, and of course there is a reason for it.

NON-VENTILATION.

One of the principal causes of disease among horses as among human beings is foul air. In large stables this cause operates effectually, for seldom is there any good arrangement for ventilating, least of all, any efficient means for maintaining even an approximately pure atmosphere. On the contrary, every precaution is taken, in cold weather, to prevent the entrance of fresh air, without which the vitiated air must remain unchanged, loaded, as it is, with the foul emanations from the urine-soaked floors and from the lungs and bodies of the animals imprisoned therein. Here, as nowhere else, is illustrated that most stupid of all economies, viz.: the “saving of foul air for the sake of its warmth.” This is largely due to the overestimate of the necessity of keeping

the temperature of the stable at a high point. Unquestionably horses would eat more, would *need* more food, if the stable were kept supplied with fresh air, if, in consequence, the temperature should average several degrees colder; but he is a mean man who would cheat his horses out of the "breath of life" for the sake of a little saving in hay and grain. Living themselves in air-tight apartments, and, often enough, innocent of all knowledge of the necessity for a constant changing of the air in their own homes, stable-keepers are, of course, guiltless of all blame in the matter referred to. They know that the warmer the animals are kept, by means of close stables and blankets, the less food they require, and, unaware of the pernicious influence exerted upon the general health of the animals, this settles the question. With good ventilation, however much the temperature of the air might be lowered, the horses would more than compensate for the extra feed, in improved digestion, vigor, and general health.

MISTAKEN KINDNESS.

I find that a great deal of the care exercised in the regimen of horses by all classes of people is—like the unwise petting and coddling of children—a source of mischief, and often constitutes positive cruelty.

Some of the kindest and most tender-hearted persons in the world spend time and money, and exercise their minds, in various ways, with the intention of doing for their horses the best that can be done; yet, in their misconceived efforts, doing, in some particu-

lars, the worst things possible. That is to say, of two evils which may present themselves they choose the greatest, or as between a good and an evil they choose the evil, by following blindly the prevalent "customs of the country"—doing all this year just as they did last, combating and even resenting the suggestions of those who essay to introduce innovations. A single illustration will serve to show my meaning and possibly add to the comfort of some of my equine friends: A horse comes to stable from a sharp drive, perspiring freely, the steam rising like a heavy mist about him, and the "go-by-rule" hostler, in the kindness of his heart, as soon as the harness is removed (a rubbing down being just then impossible, perhaps), throws the woolen blanket, perhaps two of them, if in severe cold weather, over the steaming animal, and leads him to the stall; and he will do this—even his employer would direct it—in the very face of the suggestion from a bystander that the effect is to saturate the blanket almost as though dipped in water, so that within half an hour the condition is precisely as though the boy had thrown a wet blanket over him at the start. A few minutes on the stable floor, or in his stall, unblanketed, would change the whole phase of the subject, and then the dry, warm-blanket would remain dry. Of course the question remains open as to the desirability of blanketing horses at all; there is much to be said on the side of leaving him in his natural coat, much depending, however, upon other considerations affecting the question. Again, a horse is observed to have lost his appetite, his hay

and grain remaining untouched or partly eaten. The kind-hearted owner leaves the food in the manger, for his horse to eat when he wants it, and explains to the "women folks" that "Tom" is "off his feed," and they must use "Billy," or forego their drive—a little jaunt about town, perhaps, and just what overfed and underworked Tom needed, while Billy was well enough to stay indoors, if necessary! But of this more will be said further on.

INSTINCT *vs.* REASON.

The intelligence of men, so often and in so many particulars, resembles the instinct of dumb animals, that I find therein an unanswerable argument in favor of the view that the difference between our reason and theirs is one of degree only. In point of fact, we find instances wherein exceptionally intelligent animals are positively the superiors, in all that gives evidence of logical thinking, of exceptionally unintelligent men. It is *instinct* only (if we are to distinguish between instinct and reason) which prompts a man to speedily blanket a heated and steaming horse; it is *reason* which impels another to refrain from the act. It is *instinct* which prompts most men to feed their horses just *so* often and at just *such* times, irrespective of their work or their physical condition; it is *reason* which impels one to withhold a feed, or to give his horse a fast-day, or to reduce the number of his meals, if it should be found from the experience of others that less are better. There are times when the regular "feed," however hungry the

horse may be, is extremely cruel,—times, indeed, when it means a painful death. Horses do not die from overdriving alone; at least, not often. I am inclined to think that in 99 cases in the 100, when this is the supposed cause of death, and when without such overexertion the horse might have continued to live, except for some wrong condition connected with his diet, he would still not only have lived, but would have withstood the great strain without harm; in other words, what proved too great a strain for him, *fed as he was*, would not have been excessive, or, at least, not fatal, had he been fitted for it by judicious treatment, and had the strain been succeeded by reasonable, or *reasoning*, care, instead of routine care, which I place under the head of *instinctive*. Often enough, it is the care and treatment which are most kindly intended that *kill* or break down animals prematurely, and put them, as before remarked, into the keeping of those who can only obtain the ownership of cheap horses; and such persons, by continuing the very means which have made their horses dyspeptic and emaciated, *keep* them so and prevent the recovery which might often be assured by a strictly hygienic and curative regimen.

HOW TO MANAGE.

We occasionally observe an instance wherein an especially intelligent stable-keeper buys a seedy, potbellied horse, perhaps, of a farmer, who has been in the habit of keeping hay in the creature's crib all the time, the horse munching away; eating or nibbling

constantly whenever he can work up an appetite, or, as in some cases, gormandizing as if he was an animated hay-cutter and nothing else. The man puts him into his stable, feeds him little and regularly—*hay* morning and night, and in amount only what he will eat up clean with a sharp appetite; or, if of the insatiable-appetite type, limiting him to a rational quantity, giving him light feed three times a day (grain only at noon), but giving him regular exercise or work every day. The result of this treatment is a complete transformation, which I need not describe in detail; but, from a hide-bound, lazy, and almost useless piece of horse-flesh, he produces a tough, hard, clean roadster of great value.

Sometimes this same transformation is secured without any great degree of intelligence on the part of the owner, but is rather a streak of good luck. Buying an overfed and underworked dyspeptic horse, because he is "cheap," feeding him well, but giving him an abundance of work, because he has the work for him to do, the necessary conditions are established, and the horse begins to thrive and acquire condition, to the entire surprise of his owner perhaps.

This could never have been accomplished upon any system of feeding alone; *muscles* do not grow except as they are *used*; nor is it possible to *fatten* some horses so as to give them even the semblance of *condition*, which so often deceives the novice, who, buying a sleek, handsome horse, finds, upon putting him to use, that his fat melts off and out of the degenerated carcass; and he, not knowing the cause, does not

know how to prevent the decline, or to build the creature up anew.

CONDITION IN HORSES.

“Condition has much to do with the question of ability to undergo severe labor in inclement weather without undue hazard,” says a writer in the *National Live Stock Journal*. “Condition is a state of the body not acquired in a day, as all experienced horsemen know. Without this, the trotting or the running horse is well understood to possess no hardiness; in other words, no power of endurance under hard pushing, and at the same time a vital stamina that will enable the possessor to ward off disease, though hard pressed and overheated. An attempt often made by the novice to put a horse in condition for hard labor by suddenly increasing his feed, is inevitably followed by failure. Only a system of prudent, steady feeding, daily, vigorous exercise of the muscles being practiced at the same time, will insure success. If this be omitted, the animal will perspire freely, with even moderate exertion. His heart will be found to increase the frequency of its motions, thumping against the ribs more or less violently. This can easily be detected by placing the ear over the region of the heart, or, in fact, over any part of the chest in proximity to the heart. *Suddenly feeding the horse to put him in flesh fixes a tendency to this.* Steady muscular exertion builds against this tendency, and effectually removes it, if the practice be thoroughly carried out. Do not mistake by supposing that these

evil results of quick fattening, called "softness," will only follow *fast* work. A severe pull—even a single effort, if severe—will cause as vigorous spasmodic efforts of the heart as though the animal had been hard driven under the lash."

This palpitation and sweating, easily and quickly, are indications of weakness, though the horse may be a very spirited and "strong-going" one. This is especially true of a class of horses termed "pullers" when they are not given much work, as in the case cited further on. There are few trotting horses but suffer more or less during portions of the year from this disease, viz.: degeneration of the muscular system—of the entire organism, in fact. This fully accounts for so many fine horses "going lame" suddenly. The cause may be truly enough said to be a sprain; but why the sprain? Simply because the muscles and tendons, instead of being tough, clean, and sound, are degenerated from lack of sufficient use. Instead of keeping his muscular system firm and sound, his *appearance* of condition is maintained by feed alone; and when taken out for a little speeding, he strains himself a little, *snap* go a few strands of a muscle, and he has to be hauled off and "doctored" at a great loss to his owner.

THE IMPORTANCE OF WORK

in putting a horse in condition is not fully appreciated; but it can never be done, never has been done, without. Many a valuable animal maintains a fine

appearance with little daily exercise; but put such a horse suddenly on to severe work and his lack of muscle soon becomes apparent. He has no staying power; his *fat* melts away and shows him for what he was all the time—*thin in flesh*. Mr. P., a young man in my own town, went into the grocery business. He owned a poor little horse, and having no surplus capital, he thought he would “get along” with this one at first until trade should increase to the point of compelling him to make a change. He had been vainly trying to “fat him up” with food alone, with the intent of selling him, as he had nothing for him to do; but he now began to “pick up,” and finally, flying about town from 6 A.M., to 11, and sometimes later, pulling a pretty heavy wagon all the time, and, upon occasion, taking the family out for a ride in the afternoon and evening, he became plump and handsome and virtually proof against work and weather. He *looked fat*, but, speaking roundly, there “wasn’t a spoonful of fat about him”; he *used* his muscles and so they *grew*, and being sufficiently fed, his food was all digested and assimilated, and went to nourish the muscular system so that it could grow. Not work alone, nor food alone; but both together, in generous measure—work, rest, and food—enough of each, and pure air twenty-four hours in the day—this is the law and gospel of horse hygiene. In fact, the same principle holds with regard to human beings. “Work don’t kill,” says Burdette; “it is too much recreation, my boy, that does the business for the most of them.” *Overwork* is injurious, and may be fatal; but

the chief danger from hard work comes from its being *suddenly applied* to horse, man, woman, or child, in the absence of *condition*. The only offset to abstinence from exercise is restriction in diet ; but vigorous health can only come from enough of both.

A SOFT HORSE.

Just so far as fullness of body is maintained by liberal feed, in default of equally liberal work, just so far do the size and *quality* of the muscles deteriorate. Muscle (flesh) is one thing ; fat, another. The latter is disease, pure and simple. Although this principle is recognized very generally in practice—for nobody “backs” a fat horse—it is fully comprehended by very few. Indeed, I am amazed to find how few know the real difference between two animals, one in “condition,” that is, muscular, plump, and round because of the muscles having been built up by *use*, and one that is simply fat. The fact is, the *fat* horse (or the fat man, or any other fat creature) has not a sound tissue or organ in his body ; what muscle he has is excessively mixed with fatty matters ; that is, the muscular tissue itself has shrunk and given place to globules of fat, or in other words, the creature may be said to be suffering from *fatty degeneration*. It is not necessary for the individual, whether man or beast, to be gross in form before he can be said to suffer from this disease. The very day upon which the balance is destroyed between diet and exercise (the former exceed-

ing the latter) degeneration begins; the muscles begin to diminish in size and to grow "soft." If any one wishes to comprehend this point, let him examine carefully and compare a slice of sirloin from a fat, stall-fed ox, and one from the loin of a working ox, slaughtered before fattening. Every farmer knows that in life the latter can "pull" the stall-fed ox and his load. Mark the clean, red appearance of the muscle in the one case, with no perceptible covering or admixture of fat, and mark the *size* of the muscle itself, as compared with that of the creature that is not supposed to be fit to eat until he has been made unfit for work! The very terms used to describe a delicious steak or roast tell the story—"tender and well mixed." It is not a tender and well-mixed muscle that makes a record of 2.11, or draws a heavy load with ease, but just the reverse—tough and unmixed with fat.

It is quite customary to keep up the feed of trotting horses, between seasons, permitting them to become somewhat fat, and then when they are to be fitted for sharp work, this fat is worked off and out, while muscle is being worked on, and improved in quality, by getting rid of the fat, which has been taking the place of the muscular fibre. In other words, the horse is forced to take on disease, by feeding him in excess of his work, and then is cured by restoring the just balance between work and feed. This is, in my judgment, very bad policy—proving in the end exhaustive of vital force—ruins a great many valuable horses, and injures all that are

thus treated.* Ample rest is no doubt beneficial to horses who are at times put to great strain; but the aim should be to maintain the balance. They should be fed physiologically. "Little work, little feed," should be the rule; unless, indeed, the horse-owner feels the necessity—since he is dependent, usually (if a dealer), upon the fat, sleek appearance of his horses—of keeping up the appearance of his animals, whether they get much exercise or not. But this does not demand three meals, by any means, since the horse will eat at two more than he can digest and assimilate, and may be kept fat on this system, and with less danger of an outbreak of disease, than if he were more frequently fed. But this question—the number of meals—is fully discussed, and examples cited, further on.

The following contribution to *Turf, Field, and Farm*, concerning the number of meals best for all classes of horses, has brought me several letters corroborating the position therein taken, and also others asking specific advice as to the best regimen under special conditions of work, etc., as in case of stage

* I long ago predicted that the time would come when the winning horse, or man, would be he who trained *on* flesh, instead of *off*; that is, who had no fat to get rid of, but would gain in weight from the start, during every day's work, until the maximum of muscle and muscular power was reached. This year I am pleased to see this prediction verified by the account that comes across the water, viz.: that in the last three races of certain English boat clubs, the winning crew has been the one that gained in weight during training!

teams, where the work is performed out of season or at unusual hours :

THE TWO-MEAL SYSTEM FOR HORSES.

“BIDDEFORD, ME., Dec. 9, 1882.

“*Editors of Turf, Field, and Farm* :—A writer in the *Mirror and Farmer* speaks of having fed his cattle on the two-meal system for the past seven years, and finds no occasion for feeding oftener ; in fact, he says they thrive better than on the ‘ cramming system,’ or more frequent feeding.

“Although I have never doubted that this system would work as favorable with horned cattle, my own experience has been confined mostly to human beings and horses. According to my judgment, if applied to work or road horses it will increase their working capacity very largely. That is, a given horse will do more work, day after day, either in the cart, before the plow, or on the road, and keep in prime condition ; besides it would surely, because of his improved health, tend to prolong his life, and extend his years of usefulness. But aside from mere theorizing or dogmatically asserting my opinion, which, however, I find is corroborated by every one who has given this system a fair trial, I will give here an illustration as to its operation on road horses. I bought a little, ‘ chunky ’ mare, six years old, fat and lazy, fit for nothing but a timid woman’s use—just right, one would say, for the women and children to jog round town with. She would travel about four and a half to five miles an hour with considerable urging, and if

pressed beyond that would sweat profusely. Having been recently imported from Canada, it was predicted by all the horsemen about that she would have 'the distemper' as a matter of course. In order to more effectually guard against this, I fed her but once a day for a couple of weeks, giving her from ten to twenty miles' jogging every day, Sundays included, thus reducing the *fat*, and increasing the *flesh*! Her one meal consisted of a very generous feed of hay, and four quarts of oats at night, after being thoroughly rested from work. After this, and with a considerable increase of work (averaging, all told, 150 miles per week), I gave her a light feed of hay and two quarts of oats in the morning. In the course of six months her weight, which had at first fallen off quite rapidly, was but slightly less than when I took her; but it was made up of a different substance altogether. I had exchanged 100 pounds of *fat* for 75 pounds of *flesh*; or, in other words, I had relieved her of that much *disease* (effectually preventing the predicted outbreak), and had built up in its place a large amount of muscle, at the same time improving the quality of her entire muscular system.

"Speaking in a general way, a horse is an engine made up of muscles which increase in size and quality by increased *use* (always supposing a sufficient diet), and diminish in size, as well as in power, if the work is less or lighter. Consequently, if the horse is fed for *health* (*i. e.*, in proportion to his labor), his weight will diminish with lessened, and increase with added, work. In feeding in the morning I

aimed to allow some two hours or more—the more the better—for that digestion which takes place in the stomach, before she was harnessed, and the evening meal was *never* given until long enough after she came to the stable to insure her being well rested from her labor, and this though her dinner was postponed till a late hour at night. Whenever I had occasion, and I sometimes took occasion, to give her some early work, her breakfast would be postponed until long after the drive was finished, or to a convenient hour when rested and not obliged to resume work soon thereafter. Within four months this little fat, soft, ‘logy’ mare was transformed into a clean-bodied, tough, hard little roadster that would take two in a buggy eight miles an hour for three or four hours, and after an hour’s rest take them back again in the same time, and do it, too, without whipping or showing any symptom of lagging. When I sold her I told the buyer how I fed her. Did he learn anything? No, indeed. ‘Well,’ said he, ‘I shall give her all she wants three times a day, as long as I own her.’ I see her now every day; she is just about where she was when I took her—fat and soft, and will sweat profusely if driven fifteen miles in three hours.”

EXTRA RATIONS.

Occasionally horses are, through cruelty, and sometimes unwittingly on the part of their drivers, driven to exhaustion; and it frequently happens that a horse gives out without having been pushed hard, and to the complete surprise of his owner, who can

not account for it. "I knew he had a hard jaunt before him," says the owner, "and I gave him *a couple of quarts extra* at breakfast, but he gave out before he got half-way; in fact, he wasn't himself from the start." The old saying that "a good pay-master pays after the work is done," applies here: a good horseman feeds *to-day* in proportion to the work his horse did *yesterday*. He pays him well, and every day, but never in advance. The fact is this: The digestive fluids are formed in the blood and remain subject to order, in proportion to the needs of the organism for food, and *not* in proportion to the amount of food swallowed,—the "needs" having reference to work already performed, cold endured, etc. Other things being equal, the horse that is hard pushed on an empty stomach, will bear more before breaking down, and, if driven to exhaustion, has a far better chance to recover well, than the one driven in like manner, but fed immediately before starting, and halted just long enough to swallow his dinner *en route*. The rest, without the meal, would have been far better.

I am aware that in making this statement I am running counter to the opinions of most men, based, as they are, largely upon their own sensations when deprived of their regular meals. "Needn't tell me," says the owner; "I won't work without *my* regular food, nor let my horse"; which sentiment is every way praiseworthy, and does honor to the man's heart. Nevertheless, I can not withdraw the statement, for my opinion is based upon absolute knowledge from

trial, both in the case of the horse and myself. When I ate three meals a day, I was, as nearly all men tell me is the case with them, "hungry" at, often indeed before, every regular meal. If the meal was not forthcoming from any cause, I felt faint and my stomach would "gnaw." I learned, after a time, that under such circumstances a meal lost was a better one gained; that, in short, this was a *disease* and not a natural condition at all, albeit it is the *common* experience of most persons. No person feels faint upon passing a meal, or has a gnawing stomach, except it be occasioned by an irritated or unduly congested state of that organ. It is a sure proof of *dyspepsia* (using this term in its popular sense, as implying the condition of the organ). Strictly speaking, the term is a synonym of *indigestion*.

DYSPEPSIA OR INDIGESTION

results from giving the digestive organs more than they can do. There are times when they can do nothing, or next to nothing; and when to give them nothing to do is curative, viz.: in *fever*, when we observe the effort of the organism to eliminate the impurities which constitute the real disease. The discharge from the nasal mucous membrane, for example, in epizootic influenza, frees the system of poisonous elements, sometimes amounting to several pounds a day. In this view we recognize the running at the nose as the *cure*, and not the disease. A cribbing horse, or one that will eat everything before him, no less than the one with a precarious appetite, is a dys-

peptic; all such are suffering from disease of the digestive organs. Since horses do not eat fish, flesh, and fowl, and the pernicious condiments associated with these stimulating articles of diet, and are free from all nuisances in the form of pastry, puddings, spices, and bon-bons, they have only two sources for digestive disorder, viz.: (1) Excess in diet, and (2) wrong condition at the time of eating.

It is true—most emphatically true—that unless the stable is well ventilated, the horse must suffer for want of pure air. Poor food and pure air make better blood than the best of food and foul air; and if there is abuse in this regard, the animal may fatten—in fact, this tends to insure fattening, since, for want of pure air in the lungs, the excretories (the lungs themselves, the liver, kidneys, skin, and bowels) can not perform their functions in eliminating the foul products of the natural waste of the system, and of indigestion, in case of excess in diet. Hence the animal becomes diseased, and along with constitutional disorder, the digestive organs themselves become impaired; and thus fattening may be called a third source of digestive disorder. I repeat that no creature, man or beast, should eat when tired, or directly before commencing hard work.

REST AFTER EATING.

The experiment of Jules Virez settled the question as to the non-digestion of food in default of rest. He selected two curs of the same size, age, and general *physique*, made them fast a day, and treated

them the next morning to a square meal of potato-chips and cubes of fat mutton ; but as soon as one of them had eaten his fill, he made the other stop, too. Making sure that they had both consumed the same quantity, Dog No. 1 was confined in a comfortable kennel, while No. 2 had to run after the doctor's coach, not at a breathless rate of speed, but at a fair, brisk trot, for two hours and a half. As soon as they got home the coach-dog and his comrade were slain and dissected ; the kennel-dog had completely digested his meal, while the chips and cubes in the coach-dog's stomach had not changed their form at all ; the process of digestion had not even begun ! "And," continues Dr. Oswald, from whose "Physical Education" this incident is taken, "railroad laborers, who bolt their dinner during a short interval of hard work, had better pass their recess in a hammock. Instead of strengthening them, their dinner will only oppress them, till it is digested, together with their supper, in the cool of the evening," or at night when they are in bed,—the digestion being poorly done 'midst distressing and exhausting dreams. It is not the evening meal which disturbs the troubled sleeper ; it is rather the *three loads in the same barrel* that "kick."

It does not follow from this that a horse may not be harnessed soon, or immediately after eating, when occasion calls, with the probability that no harm will result, provided the pace be moderate, and due care be taken not to overdrive. The digestion of a meal may often be delayed, however undesirable as a rule,

without causing serious disturbance,—the stomach resuming its work at the first period of leisure, or as soon as the voluntary muscular system has been rested sufficiently to permit the blood to flow freely through the mucous membrane of the stomach. No doubt Dr. Virez's coach-dog would have digested his breakfast had he lived a few hours longer. But while the aim should be to regard the principle here laid down, as closely as practicable, it is evident that, if no attention whatever be paid to it, the danger is lessened one-third by dispensing with the midday meal.

Providing always the horse be liberally, that is sufficiently fed, the *time* of feeding is of small account compared with the vital necessity of obeying this natural law in order to prevent indigestion. With a strict observance of this law—and the two-meal system renders this an easy matter—if the horse is never *over-fed* nor kept in a stived-up stable, he will not get foundered, have “pink-eye” (pneumonia), nor “catch cold,” though every stable in town may be decimated with an “epidemic.” The same horse will do more work, stand more exposure, and keep in prime working order, fed upon this principle, than under the ordinary method, which is that he must have his feed at or near the regular hour, with three meals every day.

I once took a “pulling” mare, just up from pasture, where she had been all summer. She was, of course, very round—filled out full with fat and water. I obtained possession of this mare expressly to test the effect of the “rational system” on a “puller”—a horse of whom it was said, “She hasn't

any judgment," "She wants to get there too soon," etc. She was no comfort to anybody, no woman could drive her, and few men cared to ride after her. I put her at once on the two-meal plan, and gave her ten to twenty miles' sharp drive daily. In a week my wife, who is by no means anything of a horse-woman, was driving Mollie everywhere in perfect safety. In a few months this mare, like her predecessor, was transformed completely from a fat to a muscular animal. In her case the indigestion, caused by over-frequent feeding, which made the other—and which makes so many others, indeed—"lazy," had the effect to keep her so irritated and nervous that she was headstrong and not readily manageable.

We see these

TWO PHASES OF DISEASE

all about us in the case of human animals. A lazy *man* is a sick man; at least, his lack of energy is due to positive disorder. Whether he be fat, lean, or medium; a gourmand or a "poor feeder," his physical condition is abnormal. If an obese gourmand, his whole vital force may be necessary to digest his food and expel the excess beyond what the cellular tissue can store up in the form of fat. The lean glutton's organism is taxed in like manner; while the poor tired dyspeptic—who eats but little, and that without satisfaction—suffers from faulty nutrition, because *none* of his food is well digested. The thin, wiry, "nervous" man or woman, who never can bear to rest—the human "puller"—suffers from a complication of disorders, resulting from a body and brain poisoned

by the products of indigestion—poisoned as truly as though a drug were being administered three times a day.

When I sold the “reclaimed lunatic” Mollie, she was, in spite of my urgent advice, returned to her old way of feeding. The first month, on three meals, she *lost* thirty pounds; although, or rather *because* she had less than half the work she had been doing. After this she began to increase in weight until her original weight was reached. But she had exchanged muscle for fat; and, although she did not afterward “pull,” she never has since, nor had she ever before, the *condition*—the muscular power, the ability to do a long hard day’s work with little effort—as during the year I owned her.

[Since the above was written, the mare, from full feeding and light work, began to show unmistakable symptoms of chest-founder, and, upon my renewing the suggestion, her owner decided to leave out the noon feed—reducing her diet from nine quarts of corn and oats to six of oats; feeding only twice, morning and night. Two months of this regimen, combined with an increase of her daily exercise, is fast banishing all signs of lameness].

In one other instance, a transient season of this plan—a few weeks only under my administration—began a favorable change in an old and valuable horse that was looking a little “seedy.” In this case, simply leaving out the noon feed, giving the regular breakfast and supper (of the same amount each as had been given all along), set the horse to gaining in

weight and appearance. She had become dyspeptic from overfeeding. I have never known an instance where the system, pursued year after year, resulted in failure. I could name a score or more cases as marked as those here given; while, in many more, the only *apparent* effect upon good horses, that were already in good health and condition, has been to keep them thus with something less of feed. But the gain in feed and saving of time is trifling compared with the saving of horseflesh; for animals that are habitually fed at noon (even if the "two meals" are divided into three), will sooner or later get severely hurt, by reason of the heat and fatigue of the forenoon and the resumption of work again in the afternoon, since this prevents the digestion of the mid-day meal.

C. H., of Brunswick, Me., "in the grave-stone business," which he represented as being very hard on horses, "used up," as he expresses it, several horses while feeding them generously three times a day. The last one he owned showed signs of being "over-worked," until after he adopted the two-meal plan. He says he "blundered into the practice" from having to take the noon meal at irregular hours. It was sometimes early, sometimes very late, when he and his horse dined; and finally he got into the way of eating only night and morning himself. Finding his own condition improved, he thought he would try the experiment with his horse. After a few weeks the animal began to improve and "gained right up, so that," said he, "a friend remarked one day, 'Well,

you've got a horse now, H., that can stand your work.'” “Yes,” said I, “but he couldn't until I changed his feed.” “How is that?” “Well, he was running down on three meals, and has ‘run up’ on two, that is all.”

H. B. W., of Lowell, Mass., states that he drove an advertising and delivery team for a patent medicine concern for five years, using the same pair of horses constantly. The first year he fed on the prevailing system, but soon after, acting upon the suggestion of some one who declared it would benefit his horses, he fed only morning and night. He said that for four years he had a team that attracted attention wherever he went—“a team to be proud of,” he said. For the last three years he followed the “example” of his horses and ate but twice himself, and “by keeping clear of the fancy stuff that hotel tables are generally covered with, and eating the plainest food I could find,” said he, “I cured myself of dyspepsia, and without any help from the d—d stuff I was carting about the country!” He further remarked that his horses always “drove freer” in the afternoon than in the forenoon.

PREJUDICE.

To show the prejudice of old horsemen against innovations of this sort, I will relate an instance of a gentleman who was impressed with the idea and wished to try the two-meal plan on his horse. He ordered the stable-keeper to leave out the mare's noon meal, and feed night and morning only, hay and

four quarts of oats at a feed. For a time there was no change in her appearance; but he accidentally ascertained that she was having her grain at noon the same as before. Somewhat angry at the deception practiced by the man who "wouldn't have a horse starved" in *his* stable, he changed her boarding place, ordering her feed as before. Some discussion ensued between him and the stable-keeper about the advantages of two over three meals, in which the latter predicted that he would find that it "wouldn't work with some 'hosses.'" Sure enough, it became evident in a few weeks that his horse was declining. He ordered an increase of grain at the two feeds; still she grew poor. Another increase was *ordered*, but she kept going down hill. Not suspecting any cheat, her owner put her away for another horse, directing this one to be fed in like manner. She, too, begun to decline, and in spite of twelve quarts of grain daily (*ordered*) and "all the hay she would eat up clean at each meal," she grew more and more seedy, until, at last suspecting that something was the trouble he hired a stable, and, himself, attended to the feeding. He found that the amount of grain she had been having (!) purged her, in the new stable, and he lessened the ration, more and more, until finally she began to improve on what might be called a meal and a half, viz.: a very light feed of hay and two quarts of oats in the morning, and a full feed of hay with four quarts of whole corn and oats at night. On this feed, with liberal exercise, she acquired a splendid condition in a few months. The first mare,

a little later, came into the hands of one who in his own stable tried the two-meal system ; and she, too, became plump and round on less feed than she was supposed to have at the boarding stable. It was not that this man was a natural born oat-stealer, but it is to be presumed that, being lectured on feeding, by an amateur horseman, he thought, "All right ; if he wants to pay me for starving his hosses I'll give him his money's worth !"

"COLDS" FROM INDIGESTION.

Without doubt most hard-working animals digest a considerable proportion of *all three* of their meals *at night* after getting thoroughly rested from the day's work ; the balance (quite a percentage, too, with highly-fed animals) does not simply pass along and out as an undigested residue always, but ferments (as indicated often by flatulency or some degree of purging, etc. ; or, again, constipation may be produced), poisons the blood, overtaxes the kidneys and the lungs, until finally—whatever the weather, and with or without unusual exposure—the disease breaks out in what is popularly, but mistakenly, called "a cold" (slight influenza) ; and, if the conditions have been especially aggravated—as, for example, if the stomach has been very much overloaded frequently, or if during a period of reasonably *warm* weather there has been no diminution of feed, and if feeding is kept up in spite of the "attack"—the result may be a full-fledged influenza or the dreaded pneumonia.

In fact, the various phases of this disorder—I may say, indeed, a very large range of “diseases”—are the product of (1) errors in diet as to (*a*) time, (*b*) frequency, (*c*) and amount—causing indigestion, and, consequently and unavoidably, a greater or less degree of actual blood-poisoning. (2) Lack of fresh air and light in the stable. These errors corrected, absolutely, and in a thousand cases there will be no “colds” or other internal disorders year in and year out.

It would naturally follow that *thorough ventilation* (guarding against direct draughts), a temporary and absolute *fast* until convalescence is thoroughly established, followed by an *abstemious diet*, would be the natural cure for influenza; and so in practice I have found it in every instance in the case of animals of whatever kind, including man. This treatment is successful where all others are unsatisfactory and often fatal, and in every instance will afford an immense saving in time and vitality; saving life where cure is possible.

The facts prove that influenza or any form of so-called “cold” is a *fever*, pure and simple. However chilly the patient may feel, the thermometer placed under the tongue or in the rectum shows at once that the temperature is above the normal point; and in all cases of feverishness there is disturbance of the alimentary organs—whether evident or not to the casual observer, and *rest* from all digestive labor is the proper “tonic.” It is a great piece of folly to encourage eating in the absence of appetite; it is

only less foolish to eat even with an appetite when evidences of this disorder have appeared. Taken at the outset, a single day of fasting, with regular work or exercise, will usually nip the disease in the bud; though sometimes, and whenever there has been a delay in treatment, a somewhat larger "dose" of this remedy will be required. When the disease has been permitted to run until the blood-poison has affected the entire organism to the point of *weakness*, the voluntary muscular system should not be taxed unduly, but some degree of exercise (hand-rubbing, if the creature is too weak to move about), and in the open air, is desirable. Fresh air, light, and plenty of pure water are always in order.

PREVENTION OF THE "DISTEMPER."

Whenever there is a distemper "scare," when the disease has made its appearance in town, the first thing (and, if this is attended to, the *only* thing necessary) to be done is to stop the feed entirely; not a lock of hay, no hot mashes, nor a spoonful of anything, except pure water, should be offered to any horse whose lack of condition is even suspected. Whatever may be his notion as regards the condition of his animals, or his theory as to the origin of the disorder, the owner of any number of horses may rest assured that only the ones that are *predisposed* by reason of a clogged—that is, an already diseased—condition will be "attacked."

LIKE CAUSES PRODUCE LIKE EFFECTS,

and since, as I affirm, the "distemper"—influenza, epizootic, pink-eye, or whatever name may be preferred, for it is only a question of the different stages of the same filth-disease—will only attack ill-conditioned horses; if they are kept in condition there is no occasion for alarm as to "contagion." Every horse that is in really "A-1" condition is positively as free from danger as though he lived in a world where disease and death were unknown! Such horses, being sound and clean, require no change of regimen. But if their regimen be changed by a reduction of outdoor work, there must be a corresponding reduction of food, or they can not remain disease proof. Some horses and some men, though not in health, are still proof against acute disorders of this type; the reason being that certain chronic "diseases," as well as chronic health, are unattended by the "clogging-up" process, which, if reaching a certain stage, necessitates the restorative process popularly known under the above names. All disease-producing causes should cease at once, especially while the "scare" is on, and measures at once taken to change the condition of all doubtful animals; viz., the fat ones, and all such as have been "well fed" and not well worked. In fact, no horse is well fed if given a generous diet without generous exercise. The first thing, as before remarked, is a fast, the extent of which must be determined by the attendant or the director; but it should depend upon the degree of the

supposed indisposition. The remedy is a safe one, to whatever extent it may be used. The effects of a few days' fast would be some degree of languor and indisposition for work or exercise, and the greater the need of abstinence, the more marked would be these symptoms. The fasting horse would act "lazy," or as if already in the first stage of the disorder, which, in fact, may be the case. He will not, however, be likely to go beyond this stage under this regimen. Should unmistakable symptoms of the overflow become apparent, however, the fast should continue until these abate very noticeably. Then the diet should be "dry," (that is, no gruels, mashes, or slops), and very abstemious as to quantity. Free (cool, not cold) water-drinking should be allowed at all times, except directly before meals or for two hours after. If the animal is thirsty at these proscribed times a *little* cool water may be allowed—little and often—until finally thirst is appeased. But there will be no unusual degree of thirst if the food given is not too abundant for the present capacity of the digestive organs, which is very much reduced. Appease the present thirst, but prevent it to-morrow by a still further reduction of the feed.

In some cases an attack otherwise sure to come would be averted if the animal was put on half-rations, if this was done *before any lack of appetite was discerned*, and if he were given plenty of open-air exercise, and the stable (as it should be always) so ventilated, as to be ever free from a close or stuffy condition. *Fresh air* is *Nature's febrifuge*, and the hotter

and closer the stable, and the more profuse the blanketing, the worse it must be for our *fever patient*. *Cold* air is not necessarily *fresh*; it certainly is not unless it has free communication with the main body of air without; nor do a few cracks and crevices afford sufficient ventilation for any number of horses.

HAND-RUBBING *vs.* DRUGS.

Trainers understand the importance of hand-rubbing in fitting horses for the track; but its value as a curative measure in fever, or in cases such as I have just cited, is not generally recognized. As in training for the track, the rubbing presses out the fatty globules and leaves the flesh clean and free—making a firm, pliant, springy muscle; so in the condition of disease referred to, the filthy humors which constitute the disease and have rendered the fever necessary are pressed into the circulation, from which they are secreted by the appropriate glands, and find an outlet through the various excretories. In cases where nitre, digitalis, etc., have been given “for the kidneys,” many noble animals have been sacrificed who would have been saved by causing them to swallow hot water freely, withholding all food, manipulating their limbs and muscles as before remarked, and keeping the poison-drugs out of them entirely. The diuretic may “start the water,” and this manner of starting it may not prove fatal; but it is too often followed by a complete relapse—the animal dying from blood-poison shortly after. The same may be said with regard to purgative medi-

cines. Injections of hot water and free kneading of the bowels, or percussion, are always safer and more effectual.

CONCERNING THE USE OF THE BLANKET.

Blanketing in stables is often favored solely on account of the better appearance of the coat; the hair does not grow so long, and it keeps smooth and glossy with less grooming. In the absence of the blanket the hair grows long and affords complete protection from cold, and is as much better as it is more natural. Other things equal, the horse that receives the most coddling in the way of blankets, warm stables (especially if warmth be secured by non-ventilation), guarding from wet, cold, etc., will be the least fitted for real service and the most subject to disease. If blanketed and kept in a close stable the horse will shiver in the cold in spite of blankets and extra robes; while unblanketed and accustomed to an airy, *i.e.*, a well-ventilated stable—for *size* alone does not insure pure air—he will stand, even in the most exposed situations on a severe winter's day, without any trembling. There are times, of course, when standing for any great length of time in a bleak location, especially after sweating freely, that some extra protection for the toughest horse even is useful; but the practice of *immediately* enveloping a sweaty horse with blanket or robe, and especially when the halt is to be a brief one, is anything but sound. A few minutes' exposure after hot work is an intense relief, even on the coldest day, and

the added covering occasions positive discomfort to the heated animal, and is of no advantage whatever. *After a few minutes* have been allowed for the relief mentioned, and if used to blanketing if he has to stand long in the cold, the blanket may be adjusted. But there is much unconscious cruelty practiced in the inappropriate use of the blanket at all seasons of the year.* My own practice has been to dispense with blanketing entirely, in stable and out; rarely throwing any cover over my horses, whether they are sweaty or not, and regardless of the season or the weather; never, in short, except in cases where one may be not only very hot, but also extremely tired—in such a case some extraordinary care is necessary. By pursuing this course I have *never* had a horse “catch cold,” nor made sick from any cause, when under my care or cared for under my direction. Nor is this experience peculiar to my own horses, but tallies with that of many persons who are simply careless as to the treatment their horses receive, as well as others who have adopted the rule after mature consideration as a preventive of sickness. The fact is that few persons appreciate how perfectly the hairy coat of the horse is adapted to his varying needs, and how effectually it protects him from wet, cold, heat, or sudden changes. There is no analogy between his wet coat of hair and a wet blanket (or wet garments about ourselves), and the fear of it, as a general rule, is a blind sort of instinct on our part.

* One of the worst and most constantly practiced abuses in this connection is that of throwing the folded blanket over the rump and loins at every stop or stand-still, the parts which require the least artificial protection and which (loins) are most easily injured by heating. Exposed to a cold rain or snow-storm the horse instinctively turns these parts to the “weather”!

"CLIPPING"

is, therefore, an abuse which should not be perpetrated. It is unnatural, and no amount of care can fully atone for the loss of his natural coat. The fact is that both horse and owner are by nature designed for service and to become inured to exposure, and not for "molly-coddlers"; and, under *use*, both become proof against harm from what is often considered rough treatment, but which in fact increases their vigor and effectually guards them from disease. But to rob a horse of his hair is to put upon him an unnatural kind of exposure, with no compensating advantage.

The digestive system, along with the entire organism, is exalted in proportion to the degree of active exercise in the open air; in fact, *work*, *cold weather*, and *pure air* increase the digestive powers and *all* the forces of the organism. There is a limit, of course, as with all rules, to the application of this principle; but the principle holds good under all circumstances. Blanketing a horse lessens his digestive capacity, and anything which tends in that direction reduces *all* the vital powers; the fact being that the more he can *digest*, the more he can endure, whether of work or exposure. This is simply because the more his vital powers are *taxed*, providing always they be not *overtaxed*, the more he can digest; since, as remarked elsewhere, the digestive fluids are secreted from the blood in proportion to the body's needs for nutriment, and not in proportion to the

amount of food swallowed. Extra work and exposure to cold, by a corresponding consumption of the tissues, cause demand for an increased amount of food to make good the waste, and the digestive fluids are increased in like measure. Blanketing a horse does not diminish the *size* of his stomach, and hence he will, at least for a time if permitted, eat as much as if unblanketed, and would continue to eat more than he needed, and would stuff himself whenever opportunity offered. So, too, he will for a time (and *always until affected injuriously* by the means) eat as much when at leisure as when working. But eating and digesting are far from synonymous terms. He can not *digest* more than he needs, and any excess above such needs is not only *so much* for indigestion, but tends strongly to the imperfect digestion of *all* the food swallowed and to a condition of general disorder.

KIND TREATMENT.

In addition to the causes already mentioned which impair digestion, and therefore predispose to disease, unkind treatment is often a serious one. All horses are more or less sensitive, while some are as "sensitive as a woman" to the treatment they receive. An outburst of anger, accompanied by twitching or yelling, directly before, during, or soon after a meal, would absolutely prohibit or delay digestion in case of a fine-grained animal, and perhaps occasion serious mischief. Severe indigestion often results from this cause in the case of human beings—victims to their

own or their companions' temper. The horse appreciates kind treatment, and it *pays* to give him the kindest.

OVERDRIVING—OVERWORK.

Overdriving is a relative term. The horse that never travels more than one mile at the top of his speed, is overdriven if pushed three miles at a high rate; while another, or the same, gradually worked up to it, may make five. The ordinary driving-horse that makes only his five to ten miles a day, and that at a leisurely pace, is overdriven if sent twenty-five miles at a stretch and at, say, the rate of eight miles an hour; while another, or the same, perhaps, after proper preparation, may make that distance in two and a half hours, and, with an hour's rest, return at the same rate, without being overdriven. Again, a horse that is driven every day, from twenty to forty miles, and kept in condition, will go seventy-five miles in any one day, at a rate depending upon the quality of the animal, and without straining, and may even make the return journey on the following day without harm if he is a powerful fellow by nature; but, following any extraordinary effort there should always be a day of absolute or comparative rest—sufficient rest, at all events—though a little “walk-round” may usually be an advantage, unless the animal chances to be disabled. In this case a little extra hand-rubbing will be beneficial, and care must be taken not to overfeed; for if there has been a real depletion of the vital forces by reason of too hard usage, it must

be borne in mind that the digestive system is a sharer in the hurt, and that rest alone, with the treatment—the “passive exercise” (hand-rubbing)—suggested, or perhaps a very limited diet for one day, will be the best means for restoration. In nine cases in ten, when a horse is taken sick soon after extraordinary work, it is the result of feeding him too soon or too much—before he had become sufficiently rested. Whenever a horse has been pushed to extremes, driven to or nearly to exhaustion, the time allowed for recuperation before feeding, should be correspondingly lengthened. For instance, while he may eat his dinner immediately following a leisurely drive, he being free from heat or weariness; under the pressure of a day’s journey which has well-nigh exhausted him, it would be an act of mercy to withhold all food for twelve hours. In fact, to feed sooner than this constitutes, in some instances, “cruelty to animals,” and is attended with great risk. In all cases of exhaustion from *overwork*, the best stimulant, the best “tonic,” the best *nutriment*, is—*rest*. Even an overdose of this remedy is safer than an underdose, which can be said of no other “medicine.”

CHEST FOUNDER

often results from a neglect of the above-named precaution; and constant overfeeding is a very prolific source of this disease. The stomach is invariably the seat of the disorder. That is, it originates there, and can never be eradicated while this organ continues diseased. The lungs are often affected both “sym-

pathetically" and by continuity of tissue. The muscles of the chest and shoulders, as well as the entire bony structure—from the diaphragm to the shoulder-blades and ribs—are made sore and lame by means of the congested stomach, whether this organ be acutely affected from some special cause, or chronically diseased from habitual excess in diet. The more frequently the horse is fed the more danger there is of this chronic disease of the stomach. Long intervals between meals afford time for the subsidence of the congested condition which is the normal result of the digestive process. If this process is too often repeated there is always a liability to cause it to become chronic; or, in other words, the normal digestive congestion is transformed into a disease. No doubt many of my readers have themselves experienced the very same kind of lameness, following a ball or party, and have attributed it to having "caught cold." A draught from some window was supposed to be the cause of the mischief, instead of the *fourth meal*, eaten, perhaps, when the person was hot and tired from dancing, and when he or she had already eaten one meal too much. Upon all such occasions, except for the mere sensual gratification derived from tickling the palate, there is no more need of another supper than of a fourth suit of clothes to dance in at a Fourth-of-July ball, when a single suit of mosquito-netting would, so far as comfort is concerned, be superfluous. The stomach lies close under and in contact with the diaphragm,—the great concavo-convex muscle which alone separates the stomach from the

lungs,—and which, so far from constituting an impassable barrier, may itself take on a congested state and pass it on to the lungs. From this might arise acute congestion* with imminent danger to life, more especially if from causes already mentioned the blood has been constantly or often affected by the impurities arising from indigestion, so that the tissues of the muscles are not perfectly constituted; or the disorder might become chronic in the form of bronchitis, or “heaves,” which corresponds to the asthma of the human dyspeptic. The liver, which is in immediate contact with the stomach, often becomes congested, sometimes deeply, even fatally, diseased in the same manner. And so, by *continuity of tissue*, as already stated, the entire frame forward—the chest—may readily become “foundered.” I am satisfied we have here *the* cause of the disorder under consideration.

Generally speaking, a chronic disease is the result of some chronic provocation. The real seat of the disorder being unrecognized, the horse is likely to be fed as often, and as “generously,” as before the disorder became so severe as to give rise to the “well-known symptoms.” Long before this, however, the creature would, had he the gift of speech, have complained of dull pains and disagreeable sensations. To be sure, he might not, even then, exhibit greater wisdom than is shown by many of his human prototypes, who feel these same sensations without ever

* In this case total abstinence from food for a day or more, if necessary, is indicated.

realizing the cause. Thousands upon thousands of human beings are thus affected and still take their three meals a day, work or play, grow worse, swallow medicines (prescribed by physicians as ignorant as themselves—perhaps suffering from the same complaint) and go on to their deaths without ever knowing what killed them. The natural cure for this disease, if my position is correct, lies along the line of abstemiousness in diet. When the stomach is diseased, it demands a treatment similar to that which we prescribe for a sick *man* or *horse*, viz. : light work and long intervals of rest. In chest founder, a much restricted diet, not more than two meals a day, with exercise restricted, but gradually, very gradually, increased (with diet also increased, but always leaning to the minimum)—this constitutes the general line of treatment. Although this is regarded as an incurable disease, still, I am satisfied that, intelligently wrought out, this system would restore a very large proportion of horses afflicted with chest founder. Time, often a very long time—a full year, perhaps, of the wisest management—would be necessary ; but it is not to be expected that a disease produced (as this often is) by *years* of abuse can be eradicated in a few weeks, though sometimes it may be, as in the case of an especially strongly constituted animal and under especially judicious treatment.

SOME HINTS RELATING TO FOOD AND DRINK.

The full capacity of a horse's stomach is about fifteen or sixteen quarts, but if fully distended it would

be too full for the performance of its functions. Hence, when digestion is in progress, the stomach is usually no more than two-thirds full; the contents gradually passing onward into the intestines as more food enters the stomach. In eating a full feed of hay the stomach receives what would constitute two or three times its fill, so that the part first eaten does not remain very long—perhaps twenty to thirty minutes subjected to stomach digestion—after which it passes along little by little, as it becomes fitted for intestinal digestion, and finally, when fitted therefor, it is gradually absorbed into the circulation, becoming *blood*. The albuminous portions of the food are mainly digested in the stomach, and grain contains four to six times as much of the albuminoids as a like bulk of hay in the stomach, *i.e.*, hay that has been thoroughly masticated and swallowed contains one-sixth to one-fourth as much of the albuminoids as the grain, bulk for bulk. Consequently grain requires a longer time in the stomach for sufficient gastric juice to be secreted and to exert its full dissolving effects. If, then, the grain be first eaten and soon thereafter the hay, we may be certain that the grain will be forced from the stomach before it is perfectly digested; but if we feed the hay first, it is not difficult to understand that the grain will remain in the stomach a sufficient time.

A correspondent in the *Dublin Farmer* says with relation to mixing food for horses, "We should not put a great amount of coarse food with the grain, or we will give them more than the stomach will hold,

and the last portions eaten will force the first ones into the intestines before they are thoroughly impregnated with gastric juice. Thus, two pounds of hay and four pounds of oats are about as much as should be fed at once when mixed, and if more oats are given the hay should be decreased ; for instance, five pounds of oats and one and a half pounds of hay." From the foregoing remarks we may obtain a better understanding of the effect of water on digestion. If after a full meal of hay followed by oats we allow the horse to drink profusely, a portion of the oats will be carried away into the intestines prematurely, with a corresponding loss of benefit from the grain, besides the important consideration that such portions of the grain do harm by exciting more or less irritation by reason of their indigestion. In default of digestion there will be more or less fermentation, as indicated by flatulency of the bowels, and the absorption of fermented food into the circulation is promotive of disease. The effect of such a drink after hay alone is less serious, because hay requires less time in the stomach. Still, it is believed that the free drinking should be between meals, rather than immediately before or soon after. A quart or two of water following the meal will pass the food in the stomach or be absorbed by that organ without interfering materially with the food. If after a meal the stomach receives its fill and more of cold water, it is chilled somewhat, and the secretion of gastric juice is suspended until the water has passed off or is warmed to the normal temperature

of the body, besides the undue dilution of this fluid with water renders it inert and insures indigestion. "When the stomach has got rid of a considerable part of its contents, it seems a difficult matter for it to force out the remainder," says this same Irish authority, "and fermentation and colic sometimes result. [I can not believe that this would be the case except from excess, unless it might be that the animal had not drunk enough prior to the meal to furnish the blood with sufficient liquids. In this case there might remain a residue of food in the stomach, but such residue would have been better in the bin after all.] A drink of water at such a time," he continues, "by carrying out the substance, which has remained long enough, relieves the condition. This probably explains why some tram-car [horse-car] companies have found it advisable to water their horses at midnight."

SORE BACK.

A vast amount of needless suffering is caused to our patient and willing servants from this disease. Many a horse, with high feed and little work, constantly suffers, in spite of physics, with raw sores, necessitating constant changes of the position of the saddle—to make a new sore while the old one heals. This is not only painful to the horse, but also to the tender-hearted owner, who so pities the noble creature that he "favors" him all he can—by refusing to have him harnessed for any one except when absolutely necessary—himself going on foot to "save"

his horse; thus doing precisely the wrong thing. The *sores* may thus be cured, but not *the disease*. How almost surely a cure results when the animal is by some fortunate circumstance put to steady service. Such animals are unsound throughout; their tissues are formed from impure blood, the product of indigestion. They eat, but not "in the sweat of their brows"—and it takes a good deal of sweat (or rather *work*, for the more one works, the less easily he sweats) to prevent disease if "a good deal of food" is eaten. It is quite possible for a horse to become sore-backed from overwork—either relative or positive overwork; that is, where the work is extremely hard or the diet absolutely deficient. In the first instance the creature, working beyond his strength, so exhausts his reserve force, that he has not sufficient vitality to digest his food; hence *he* suffers from indigestion and impure blood, the same as the horse of leisure who eats to excess. A starvation diet accomplishes the same thing, finally, only in a different way; the system being under-nourished from lack of food instead of any fault with the digestive organs. It might be said that in such cases the digestive organs become weak and disordered as well as the general muscular system; but the

TANNER EXPERIMENT PROVED

that after an extended fast there was practically no limit to the capacity of the digestive organs until reparation had been made for the forty days' *cannibalism*. He ate every two or three hours; gaining

in less than three weeks all the weight he had lost in his forty days' fast. His added weight, however, put on so rapidly, was not the sort of stuff to give him staying power for hard muscular exertion. His decline in weight being attended by complete rest of the digestive apparatus, these organs could make up for lost time; but, had he declined by reason of dyspepsia, as is the fact with a great proportion of horses and men who decline, *then*, in that case, his meals should have been light, few, and far between, or his work brought up to balance the account, to insure a return to health and normal weight.

When sores come readily and heal with difficulty, or do not "stay healed," the creature, whether man or beast, is "scrofulous." Indigestion and foul air are

THE CAUSES OF SCROFULA;

the blood (and consequently the tissues) being formed second by second, or indeed constantly, from impure material.

Pure air is as essential as food—more so, in fact, if we are to distinguish between the two, since either horses or men can live for weeks without food or days without drink, but if deprived of air for as many *minutes* death is certain. If the air breathed habitually is very impure, a scrofulous condition is the inevitable result. An excess of food or a deficiency of air will produce this disease; and, since one or both of these causes are operative in some degree in most, if not all—fearfully so in many—stables, we have not to search for "malaria," "disease waves,"

contagion, nor any "monkery" of that sort, to account for the epidemics which sweep over the land. When quite a percentage of all the horses in the country are predisposed in this way, as they surely are, it need cause no surprise when, under stress of some *favoring* condition in the atmosphere, Nature undertakes the restoration of the *diseased* ones, or all of the worst cases, and sets the mucous membranes of their noses to eliminating the accumulated scrofulous humors—or, in plain terms, filth.

"Rightly understood, the external symptoms of a disease constitute a restorative process that can not be brought to a satisfactory issue till the cause of the evil is removed." Skin diseases, ulcers, catarrhal disorders, including

"GLANDERS,"

in short, all blood disorders, are amply accounted for in the manner described. To know the cause of an evil is to enable us to prevent it, and is an immense aid in our efforts to restore health when the cause has been for any reason permitted to produce sickness. But we shall always fail in our search if we look for anything in the wrong direction; and, in attempting to aid Nature (for that is the physician's sole business) in her efforts to cure, we are certain to hinder her unless we know how the organism is affected, and just what she is trying to accomplish.

In cases of disease, when from any cause the alimentary apparatus is so impaired that food is transformed into "humors" largely, instead of into pure

blood, about the most foolish thing I can conceive is to keep on feeding and administer "condition powders," purgative medicines, or apply a seton to run off the products; and this is continually being done all over the country. A few days' fast and a sufficiently restricted diet will enable the system to cleanse itself—to "clean house," so to say—by letting the overtaxed excretories have everything their own way, while the digestive organs obtain, meantime, the rest they so much need.

IN KIDNEY COMPLAINTS

—which usually arise from the same cause—the kidneys are especially taxed in all cases of excessive alimentation. Instead of giving these organs more to do by feeding or drugging the patient, cease for a little time; allow warm water plentifully if there is thirst; even turn down a few quarts occasionally in any event.* If the kidneys have struck work, they will resume as soon as they have had a little rest. Digitalis and niter would not have to be resorted to but for the continued feeding, and, in any case, they are more likely to do harm than good.

I will illustrate in a manner the

RELATION OF CONDITION TO RESERVED FORCE.

I have already given the definition of the former term, and will here define the latter. The term

* "Of all diuretics, pure water is the best," says Dr. Dickinson in his celebrated work on "Bright's Disease" (W. Howship Dickinson, M.D., F.R.C.P., etc.)

"reserved force" denotes the balance of physical power on the part, we will say, of the horse, to continue working on any given day *beyond his ordinary daily habit* and without extreme weariness; or, at least, it is here used in that sense. As this capacity is diminished by inaction, or augmented by use, we have the ill or the well-conditioned horse. The amount of labor the horse can accomplish up to, or nearly to, the point above mentioned, may be said to constitute his reserved force—his vital bank account—except the power to *continue to live* and to *recover*, supposing that he were to be pressed to complete exhaustion. Strictly speaking, *this* would represent the limit of his reserved force; but we have in view the former definition.

Let us, for example, take the case of a gentleman's driving horse, little used—one, say, that has for years seldom done more than his five to ten miles roading every day at a "mixed" rate of speed; seldom making more than ten, as often making only five, and frequently remaining in his stall all day.* Let us suppose (for we can do no more than this, nor is more needed to illustrate my meaning) that he could make to-day, at an ordinary "across country" or road rate, forty miles (or twenty at a sharp pace), and, though coming to stable pretty tired, still not overtaxed.

* A large box-stall, with a hard floor and no litter, may be reckoned so much "to the good"; since every step the horse takes up to a certain limit is an advantage; and to remain absolutely inactive for a single day hitched in a narrow stall, is, as a rule, a positive injury.

How to put him in shape to make seventy-five miles in a day at a favoring pace, say in twelve hours, or forty in five hours, and without taxing him more heavily than in the case first supposed—that is the question. Of course, there are many horses that could not be brought up to this point, but it would be easily within the limits of any natural roadster. So far as condition relates to vigorous health and *longevity*, the limit would be better fixed at a somewhat lower figure perhaps, providing always that the *diet* were correspondingly restricted; for it is certain that the horse that is fueled up, so to say, for two hundred miles a week, had better make that number than anything under it. Without a waste of words, I will say that the principle consists in gradually increasing the work up to say twenty-five to fifty miles a day, averaging thirty-five perhaps, and at a good average road-gait. The point is that a road-horse may accomplish on any given day, if he is kept in *condition*, two to five times his daily average—depending, of course, upon what his average is.* He may approach this for two days in succession, even, if naturally a powerful animal, and without overtaxing him; providing this is followed by ample rest—say an entire day in a box-stall, or a little walk-round on the “off day.” In this I am not consider-

* It is evident that while a horse that averages ten miles a day might be driven five times that distance upon occasion, the one making thirty-five or forty would be limited to say eighty miles, or about twice his average; the degree of exhaustion in the two cases being, we will suppose, about equal.

ing the constitutional difference in horses, as to their varying capacity for performing great tasks; that is altogether another question. We know that there is a limit to each creature's capacity for improvement; but, so much has *use* to do with this question, that under a wise cultivation the reserve force, or the *power*, we will say, of a scrub-horse may be so improved, that he could perform easily on any given day or week an amount of work (no reference being made to a mile spurt, by any means) which would be impossible for the most superior animal not in "condition," although appearing well and moving about glibly enough when taken out for a little drive. This principle, though comprehended in some measure by horsemen, and governing their operations to a degree, is, after all, very imperfectly understood; that is, they do not "work it for all there is in it."

FAT AND DISEASE.

In undertaking to put a "soft" horse into condition there will be at first a decrease in weight. This can not be prevented (even if it were desirable) by increasing his feed, which has all along been excessive, considering his work. It will take some time and increase of work before he will require any extra feed, if indeed a diminution may not be desirable (see case given in note to *Turf, Field and Farm*, p. 24). But when he shall have been brought up to a high condition of power, he may even have become as plump as at the start when he was *fat*, and still not have any fat about him; if so, his *weight* will have

considerably increased. *Flesh* is heavier than *fat*; *i.e.*, its specific gravity is greater.

The view has for years been forcing itself upon my mind (and recent study and reflection upon past and present experiences have confirmed it so unmistakably that it has become a settled conviction) that the power of the organism to withstand disease-producing causes from without depends upon the absence of disease-producing causes within. If the latter are practically avoided, man becomes practically disease-proof; and it is no less true of the horse; and, moreover, that in proportion to the excess of fat and water in the tissues of the body, there exists a susceptibility to epidemic or other diseases; while, with bodies made strong and clean with true flesh produced by a well-balanced regimen, we are comparatively proof against all forms of disease.

And now comes Professor Gustave Jaeger, of Stuttgart, "who has proved," says Dr. Schlegel, in a recent essay, "that the specific gravity of different individuals is very different, and that the state of health of those individuals is closely connected with their specific gravity. The greater the weight of the human body in comparison to the space which it occupies, *i.e.*, the greater its specific gravity, the more able it is to resist epidemic diseases. Persons of a low specific gravity are taken ill from very insignificant causes, such as a cold, and are very susceptible to contagious diseases. Such persons have usually a fullness of the body, and are even corpulent, but just that which gives them a great size is useless ballast,

viz.: fat and water. These substances endow the heaviest bodies with a comparatively low specific gravity, giving, at the same time, to the constitution, little power of resistance."

The German scientists are very much interested in Dr. Jaeger's discoveries, and have great faith in them. No one there doubts that he has discovered and proved beyond cavil that the power of the human body to resist disease depends upon its specific gravity, and this unquestionably is a valuable discovery to the medical profession.

It is manifestly true that the soundness of the tissues and their specific gravity must depend upon the quality and quantity of the ingesta, including the kind of air habitually breathed, and upon the *balance* maintained between the amount of work performed and of food eaten. Upon the wisdom displayed in carrying out these views or considerations depends the power of the organism to maintain that just balance which we term *health*.

It is not essential to fix the exact

AMOUNT OF FOOD NECESSARY

for any and every horse, so that the owner may weigh and measure exactly in proportion to the work or exercise his horse is doing. Horses differ somewhat as to their needs (less, however, than is usually supposed)—some working harder than others to accomplish the same service—but it is entirely out of reason for a horse averaging only fifty to seventy-five miles buggy-riding a week to consume as much

grain as a grocer's horse pulling an express wagon one hundred and fifty miles, besides taking the family out for a drive every Sunday perhaps. And yet the latter performing all this keeps plump, round, and "feeling good" throughout the year, on say nine quarts, often less, of oats a day; while often enough the horse of leisure consumes twelve quarts of grain and possibly as much hay as the worker. For a time he may maintain a fine appearance, but we seldom observe instances of such animals remaining round and handsome as well as spirited to what is usually regarded a ripe old age—say eighteen to twenty years; but why not thirty-five to forty? But oftener than otherwise, as already remarked, these animals begin to decline, grow seedy (dyspeptic), and, at the age of eight or ten years, become worthless as family horses, where *appearance* counts for more than, or is regarded as synonymous with, *condition*. Out of the ranks of this class, too, come the victims to acute disease; a few "attacks" of this sort (unless finally fatal) preceding a general decline.

As a general thing our people use too much hay. It is the prevalent idea everywhere that a horse may have "all the hay he will eat up clean," whether he is a worker or not. Thus he is at the mercy of his appetite, which will often lead one horse not averaging one hour of hard work a day to eat double the hay eaten by another that works six, eight, or ten hours. "Horses ain't alike," satisfies the average man when this question comes up. Now, if a horse is doing steady hard work, as, for example, hauling heavy loads

for eight to ten hours a day, and is sufficiently fed, he will maintain a more nearly perfect condition than is possible for the horse whose exercise is very light and irregular. The latter is certain to become disordered unless sufficiently restricted not only as to grain, but hay also. For instance, take the hard-working draught horse that does six days hard work every week. Ten pounds of hay and six quarts of whole corn for a horse of this kind weighing, say, 1,200 pounds, would be a generous and ample ration: the breakfast consisting of three pounds of hay and three quarts of corn, and at night, two hours after quitting work, seven pounds of hay *followed* by three quarts of corn. The hay might all be fed at night, and only the three quarts of corn in the morning; the horse in this case filling himself with hay at night; then having his three quarts of corn (or its equivalent in other grain), after which he will lie pretty much all night contentedly, finishing his hay at early morn, when he will be ready to do justice to his small feed of grain. Of course, many will still hold to the three-meals system, but we are improving upon the old practice by giving only a light feed of grain at noon; no hay, except morning and night. I can not too strongly urge, however, and especially for hard-working horses, a fair trial of the two-meals plan, with the principal meal at night, first allowing a liberal time for rest.

In my own city I find that one truckman working five horses, feeds each, regardless of size or work, eight quarts daily of corn and oats. One pair, weigh-

ing 1,350 pounds each, and hauling heavy loads; the other three animals about 1,000 pounds each, and doing light work—all fed alike! In this stable, last year, there were three cases of distemper—the three lightly-worked, but equally fed, animals were the victims! Does this not afford much more than a hint? In the stable next door are seven horses, weighing about 1,400 pounds each, and doing ten hours' hard work every day, and yet they eat but six quarts of grain each—four quarts of corn (two quarts morning and night), and two quarts of oats, the latter the only feed at noon. These horses are in splendid condition all the time: they *look* fat, but they are not so, being filled out with solid muscle. Another pair, one of the city teams, young horses, four and five years old, weighing 1,500 pounds each, have but six quarts of oats a day, and present an elegant appearance. A young, growing animal, other things equal, requires more than an old one. Indeed, the *digestive* powers of any creature correspond very closely to his muscular powers. Hence, as old age and decrepitude come on, the food ration, as well as the work ration, requires to be curtailed. So long, however, as any animal or any man can and does perform his full measure of work, he can and will digest his full measure of food—providing, always, that he has a full measure of fresh air twenty-four hours every day!

If the foregoing be the ration for a draught horse working from morning till night, how much should be allowed for the healthy maintenance of a horse weighing 900 or 950 pounds, standing in the stable,

nearly all day, and only taken out for an hour's drive, or possibly making on an average five miles a day? Without doubt five pounds of hay and four quarts of oats (or two and a half of corn) would be more than he would be able to digest. Probably nice bright barley or rye straw would be much better than the hay in all such cases, as well as for young and growing animals; the grain ration being sufficiently increased, say fifty per cent. Thousands of horses in private stables—horses whose work is far from light—are kept thoroughly nourished and in prime condition on four to six quarts of oats, with liberal rations of hay, while other horses look pinched on double the quantity of grain, though taking no more, perhaps less exercise. In fact, such horses are victims to excess in diet, and their owners can not comprehend the fact, but would sooner increase than diminish their feed. Three times the work or one-third the food would in the course of a few months (chronic diseases can never be *suddenly* cured) improve the appearance of many of these underworked horses who are swallowing ten to twelve quarts of grain every day.

This affords a hint and a very useful one to such as desire to study the question. The old saying,

“ONE'S MEAT ANOTHER'S POISON,”

as usually applied, is most mischievous and misleading. The fact is that horses, like men, are when at leisure (if not always) natural gourmands, and the harder all creatures work, the less applicable this term is in de-

scribing their dietetic characteristics ; for the more we work, the more we *must* and are every way *entitled* to eat. When working up to one's full capacity and exposed to the vicissitudes of a cold climate, then, and then only, is the appetite anything of a guide as to the amount of food best calculated to promote health. With rare exceptions horses will never restrict their appetites, but will continue to eat until they have largely exceeded a physiological ration, whether of hay or grain. Whenever an exception to this rule has to be noted, it may be depended upon that the animal is already somewhat clogged, and, in consequence, is slightly "off his feed." Some horses are, it is true, less gluttonous than most of the race ; but to the last one, especially when doing light work, they will eat too much if permitted ; or, in other words, they will get ahead of their digestion ; and are, therefore, predisposed to the influenza cure or to the pink-eye cure, or some other of Nature's methods of eliminating disease. We know that there is no safety in permitting any horse to have free access to the grain bin ; but if he has such liberty with the hay-mow, or has hay in his crib most of the time, which is the same thing, he will certainly become dyspeptic in time, or at any rate will keep himself so stuffed out (unless he is so overfed with grain as to have little appetite for hay), as to be unfit for a free and easy gait on the road when first taken out.

It is no easy matter to insure the health of the "sedentary" horse. The fact is, he, like his master, is designed by Nature for *action*, not for a sedentary

life, and, as elsewhere remarked, the only possible offset for abstinence from exercise is a corresponding restriction in food, upon the same principle with which we treat the steam engine; viz., the more power required, the more fuel burned. Two important points of difference may be here noted between the dead and the living machines: (1) the former when not employed requires *no* fuel; the latter is *never totally* unemployed, strictly speaking; since the entire organism is in a measure at work, and, therefore, requires *some* fuel (food). (2) The dead engine may be fed to its full capacity, though exerting no power beyond the more rapid revolution of its driving-wheels, and if in consequence a part gives out, it may be replaced as good as new, and this replacement may go on indefinitely; as with the old revolutionary gun, with its "new lock, stock, and barrel," but not so with the living machine. Full rations for light work is in direct contravention of Nature's law, and the penalty is inevitable—a shortening of life to a great degree in *every* instance, and its speedy stamping out in a vast many cases.

In any event a horse that eats the equivalent of five pounds of hay and six quarts of oats daily, should take an amount of exercise equivalent to fifteen to twenty miles' roading at the rate of six to eight miles an hour at least, or say 125 miles every week, even if it has to be done with no more than the usual regard for the rule I have laid down as to working on a full stomach. That is to say, of the two rules, viz., (1) ample exercise to balance diet, and (2)

no work directly after eating, the first is the most important; but the aim should be to regard both rules as closely as possible. So far as the above ration is exceeded, there should be a corresponding increase in the amount of work performed.

THE BEST FEED.

For ordinary purposes hay and oats form a complete diet, and, as all know, these are the staples. I am satisfied that the less change or variety there is in the feed the better. The stomach of any creature becomes adapted to the regular food, and can digest and assimilate far better than where it has one kind to-day and another to-morrow and another the next, or greatly differing quantities of the same. This principle is very generally admitted; but many still harbor the idea that some change is essential, as an occasional change from oats to corn, and *vice versa*. The *tendency* of this is to produce indigestion, and there is undoubtedly—though it may not be observed—less perfect digestion in every case for the first few days on the new diet.* The reason usually given for such a change is that they “eat sharper” or have a sharper appetite in consequence. This alone would go far to condemn the practice, for there will never be a lack of perfect appetite for the regular diet, except as the result of getting a little too much of it. It

* Cows at pasture will generally shrink their milk to some degree at first if a ration of grain is *added* to their diet as well as when their feed is lessened. The reason is that the stomach has to adapt itself to the digestion of a new food.

is truly enough said of some horses that "oats don't do them any good," or much good, to say the least. These animals are so greedy that they swallow their oats with but very little mastication, and hence there is a failure in digestion. For such horses whole corn is the only proper grain, and in many instances even this should be given

ON THE COB.

This is by far the best way to feed corn in any case, more especially with old horses. Fed thus it is sure to get the most complete mastication, so essential to digestion and the extraction of the entire nutriment. F. D. Curtis, of Kirby homestead, and many others speak highly in favor of this feed from actual experience. It is almost the exclusive grain fed—and sometimes almost the exclusive feed—in the West and Southwest. I believe that in many cases the use of the cob itself, ground with the corn, is a great advantage—furnishing bulk, and *some* nutriment—especially for horses of light work.

FLATULENCE—CRIBBING.

The idea prevails very generally that a horse becomes flatulent by swallowing air; and, if he is a "cribber," it is thought to be a sure case. Now it is about as difficult a matter for one to take air into the stomach as food into the lungs—perhaps I may say that it is even more so. Certainly the latter is one of the rarest circumstances; the former is well-nigh impossible, and, I believe, never occurs. It is not

Nature's way of doing things. On the other hand, it is most fortunate that she does try to help us out of a bad fix, first, by causing the generation of gas through fermentation, when too much food has been swallowed or taken under wrong conditions; and second, by arranging for its escape by one outlet or another.

The crib-biter is a dyspeptic without doubt. It is not positively known that this practice is pursued for the purpose of facilitating the eructation of gas from the stomach, though many believe this to be so, and there are certainly good grounds for this belief. The practice may arise from the uneasiness occasioned by the irritation and discomfort of a disordered stomach.

"We conclude," says the *Prairie Farmer*, "that it generally arises in horses in poor condition, and that, in the first instance, the habit is acquired from an effort of nature to get rid of the gases collected in the stomach. We have not known a fat horse to take to crib-biting by standing next to another affected with it, but a lean horse that is difficult to get fat may do so. This habit when once acquired, will seldom be left off, but the same diseased action and tendency to flatulency will still continue. A greatly improved regimen is the only hope. We do not think that horses inhale the air in crib-biting. We consider it an effort to expel air. We never saw a horse make a gulp or attempt to swallow air. Whether any air is expelled from the stomach in crib-biting we can not determine, but think there is

some portion, and that the principal noise is from the fauces. The construction of the fauces and stomach of a horse renders the eructation of air a difficult process, and we have seen horses nearly choked by a sudden rush of gas up the œsophagus, but this effect was probably caused by the noxious quality of the gas. The distention of the stomach of the animal in crib-biting depends, we consider, on the gases given out from the food, as a proof of which the hindering a crib-biter from his habit will not always prevent this distention. We all know that many persons of sedentary habits are peculiarly liable to dyspepsia and flatulency, and we must all have experienced the unpleasant sensation attending it. How are they relieved? By exercise or by giving an agent to dispel those gases."

Since an "agent" is very inexpensive, at least in immediate cash-outlay, and less bothersome than to spend one's time in simply exercising an animal that has no steady employment, it is often resorted to; but the more dosing he gets, the worse he is off finally.

In my opinion, cribbing is neither a habit nor a vice, but rather a symptom of disease. I have never known a case of a horse that fully satisfied my views as to condition to take up or continue the practice of crib-biting, though, as the writer quoted says, horses given to it seldom leave it off. But this is, in my opinion, because the disease which gives rise to it is allowed to continue by a continuance of the same general regimen which caused it. A chronic disease is usually the result of chronic disobedience

to natural laws—a continued protest, wherein nature's patience under abuse is aptly illustrated. Sedentary men and sedentary horses, *i.e.*, those who do not work steadily a good portion of the day, are generally subject to flatulence; and this is because they have an appetite for liberal rations, relatively speaking (and often positively), notwithstanding the fact that the said rations are not "earned by the sweat of the brow"! Such individuals are relieved by a change of regimen, as working more or eating less, perhaps both. It is easier to prevail upon a man to take more exercise than to induce him to take less food; and, of the two, the former is far the best. It is the same with the horse in all respects. If the change is carried far enough, if the work is long and steady enough to balance the diet, and if the food is of the right sort and taken at proper times, there will be entire exemption from indigestion and consequently from flatulence (perhaps not immediately, but finally), and, in the case of the cribbing horse, the "habit" will be eventually dropped. Since, however, it is not practicable to give all horses sufficient work or exercise to keep them in prime condition, and since they are rarely restricted in diet to correspond—for we are inevitably tempted to overfeed—few cribbers are ever cured. The horse is willing to work early and late. He is *ambitious* to eat largely, even though deprived of the work which is equally essential to health and (prolonged) life.

Says a recent writer (and this experience is not unique by any means): "We have observed that

when crib-biters are on long, slow, regular work, they crib less. We have seen many cases in which crib-biters being debarred from their habit, have fallen away in flesh, and others in which the animal has been much more liable to colic; and we think that in many crib-biters the habit is necessary to the health of the animal. We usually see crib-biters thin, but we think that proceeds more from a diseased action of the digestive organs than from the effect of the habit, and their being poor is no proof that crib-biting makes them so. When a crib-biter continues in good health and condition, if he can be kept apart from other horses, we see no reason why he should be debarred from cribbing; and, indeed, we think that, generally speaking, it would prove injurious to him."

I would advise a trial of corn on the cob for cribbing horses. This gives them *honest gnawing* and less excuse, need, or desire for that which works mischief. Besides, this form of diet is in other ways good for whatever ails them. It is eaten slowly, masticated thoroughly, and will, therefore, be more perfectly digested—that is, the quantity that can possibly be digested; or, in other words, the amount suited to their needs. The amount necessary will be much less in this form than if shelled for them. Little hay (if nice, clean straw is available) with this feed for the horse of light work is a good rule. In nothing I have said have I designed to encourage insufficient feeding. Every creature that is permitted to live should be furnished with

PLENTY TO EAT AND DRINK;

but "enough is *better* than a feast," and it is no kindness to dumb animals to overfeed and underwork them, even if we do thus serve ourselves. If we ourselves choose disease-producing habits, we have no right to make that choice for the creatures who are at our mercy.

THE HORSE-OF-ALL-WORK.

"What kind of a horse should the all-purpose horse be?" was asked of Colonel Coleman, of Illinois, and he replied, "It should be a horse sixteen hands high, with good serviceable body and limbs, and then the more style he has the better. If he carries a fine head on a well-arched neck; if he has a long bushy tail and an active way of going at the walk or the trot or the run even, all the better. Such a horse is large enough, and not too large. He is just the size for the plow or the wagon, for the saddle or the buggy or the carriage. He is ready and suitable for any job of work on the farm or off of it. If he is for sale his owner will find plenty of buyers. If he has the size and qualities spoken of, and is in addition trotting-bred, so much the better, for he will command so much the greater price.

"The horse 'Capt. Lewis' was taken from the plow last spring, had never had any training, and trotted in 2:20 before the first season was over, and \$20,000 has been refused for him. St. Julien, with a record of 2:11 $\frac{1}{4}$, used to be worked on the

farm and driven in a milk wagon, and \$40,000 would not buy him. Occident, with a record of 2:16 $\frac{1}{4}$, used to be driven in a sand-cart and was most unmercifully abused, and numbers of such instances could be given to show the value of trotting-bred ancestry [and of

PLENTY OF SOLID WORK

to form a splendid muscular system, the Colonel might have added]. But if the thorough-bred or running-bred stallion be preferred, and has the size and qualities desired, use him. Have you never seen a model stallion or model mare, with size, style, and beauty that just filled the bill? Secure such or breed to such and you get such, for 'like begets like.' Select your brood mares, after securing the proper stallion, ever keeping size, style, color, action, disposition, and soundness in view, and you can not make a mistake either in breeding farm horses, carriage horses, trotting horses, running horses, or pack horses. This breeding to the common scrub horses is costing the farmers millions."

TURNING HORSES TO GRASS.

It is a popular idea that a horse kept up on a plank floor and fed on dry feed for a considerable time needs "a run to grass," and will be improved in condition by such a change, says the *National Live Stock Journal*. It is not generally sufficiently considered that such a change is violent; rendered so by the

sudden change from dry, nutritious food to which the system had become accustomed, and has done well on, to a surfeit of grass, which distends the digestive organs, ferments, unduly loosening the bowels, and taking off firm flesh which can hardly be restored under a month or two of careful feeding and exercising.

Changes in the food given to farm animals, with proper restrictions, are proper to be made, but such as are made through recommendations by ignorant persons, no sound reasons existing for them, are not likely to prove beneficial. A horse is frequently turned out for the purpose, in the language of the groom, of "taking the fever out of him," while, if he has been properly cared for, and driven with discretion, he will have no fever in him. If he exhibits feverish symptoms, a day's fast, or a little less food and more fresh air, with more exercise in many cases, and less work in others, will very speedily restore the balance. But to administer physic, change his feed, or turn him out to grass, on the assumption that it is good for the animal to be occasionally "loosened up," is wrong.

The horse-owner himself would not be likely, when in the best possible state of health—the digestion good and the muscles firm—to listen to a suggestion that he leave off his bread, meat, potatoes, and confine himself to greens and water for a month or two. This might do very well in midsummer, as a measure for counteracting the mischief of enforced and absolute idleness or lack of exercise; but all such changes,

whether in man or beast, disturb the functions, diminish the proportion of red globules in the blood, render the muscular fibers flabby, that they tire soon on exertion, overstimulate the kidneys and skin, because these emunctories are called upon to release from the system an excess of fluid, green grass being largely made up of water. This excessive action impairs, lets down below the healthy standard, and it takes time, feed, and care to replace wasted tissues and restore lost tone.

But it is not alone the sudden change referred to which causes risk. The horse accustomed to a dry stable, protected from wet above and beneath, is poorly prepared to stay out in the cold rains of autumn, much less to lie in the wet. This exposure makes a greater impression than it otherwise would because of the change from grain to grass, the power of resistance being lessened in proportion as the blood has parted with its globules. Loss of condition and a staring coat come from this exposure, and if the horse be at all susceptible to lung trouble he may contract this. Hence, for these reasons, the idea of turning a horse out to get him into condition is a very erroneous one.

If, for any reason—and this should not be an imaginary one—the horse is thought to require green food, or a change, for a time, from the habitual dry grain, then give him bran mashes and roots. But the moment this course is entered upon the system is weakened, the effect being precisely upon the muscles of the horse as upon the steel spring when the

temper is taken out. The English farmer feeds roots, not because of any supposed high nutritive value, as they are well known to be made up of three-fourths and over of water, but because, in the case of fattening animals, especially cattle and sheep, roots maintain, in stock confined in the stall or pen, a condition akin to that enjoyed while upon grass. But these reasons do not at all apply to the horse; in fact, this is precisely what a *living* creature, whether man or beast, should avoid—only *dying* animals, animals, that is to say, designed for slaughter, and in whose cases the question of *sound health* for next year and coming years does not enter into the account, are subjects for fattening,—for if, while kept either for work or speed, he is made to accumulate fat from soft or green food, in proportion to the fat so laid on, in that proportion does he part with his ability to do bodily labor. The less changes in his diet the better. He will never lack for appetite unless he gets ahead of his stomach; and then give it time enough and it will catch up!

But very few know anything of the value of oil-cake meal for horses. Its use in fattening fine-bred cattle has long been common, and its value fully appreciated. The same can be said of swine, for no other feed will cause a pig to gain, put him in show condition so speedily, and give him a glossiness of coat not obtainable in any other way so well as linseed oil-cake meal. What oil-cake will do for cattle and pigs it will do equally well for horses. A horse appearing to be bound up, as this term is understood in the

stable, can, by the use of this feed, be relieved of this condition as promptly as by turning out to grass, involving none of the contingencies which attend the latter, the full strength and vigor being maintained in the meantime. Nothing so quickly improves the coat of the horse as the use of a little oil-cake incorporated with his feed, while turning out to grass in sun and rain fades and roughens the hair in a week's time. In addition to this, oil-cake loosens the bowels, the degree to which this is done being entirely under control, while the effect of a run on grass is largely a matter of chance.

THE FEEDING OF ROAD HORSES.

Eight years ago I began to practice medicine in the country (says "an Orange County doctor," in the *Tribune*), and was advised by my father-in-law, a physician of thirty years' experience, to feed my horse but twice a day. The proposition was indignantly spurned; I ate three times daily; why should not my horse? At last prevailed upon, I made a trial of the system, and after some years' experience am more than satisfied. I can most heartily endorse all that Dr. Page wrote—in the recent article on "Horse Hygiene"—and would respectfully submit the following rules for feeding road horses: (1) Feed as near 6 A.M. and 6 P.M. as possible; or in winter at 5 P.M. if preferred. (2) Vary your feed in kind from time to time; oats, however, always being the staple. (3) Vary the quantity of feed according to the work. (4) Always shake the dust and settlings out of your hay, and use

only a very moderate quantity. (5) Never drive your horse, if you can help it, until he has stood at least two hours after feeding and watering, and never feed or water until he has rested at least one hour.

[It would always be safe—better, indeed—to modify this rule in so far as to permit of a small draught of water, if the animal is thirsty. However hot or tired he may be, a little water will do good, not harm, and it would often be cruel to refuse it. If, however, he be permitted to drink his fill at such a time, he might take more than the organism needed; enough to cause discomfort, even serious disorder.]

Now a few comments. RULE I. Feed your horse in the morning all the grain he will eat clean; that is, the ration that he will finish with a keen relish, day after day,—not what he might be inclined to swallow, say, to-day, but which would make him logy for the next six hours, or cloy him and prevent a sharp appetite for the next meal. When he has eaten it, offer him a little hay; my rule is, as much as you can pack twice in a water-bucket. Too much hay bloats a horse and makes his wind short, and may produce heaves. Let your hay be clean; shake out the dust and pick out the large weeds. After he has finished his hay he may be groomed and watered, and two hours after he has had his grain he is ready for the road. His food has been at least partially digested, and passed to credit of the blood, and thence to the muscular and nervous system; and instead of a load of crude substances to carry, he feels an invigoration of fresh vitality supplied to his system. Now, the horse so

treated and driven upon the road needs no feeding until night; further, he is better not fed. If your driving at noon or near it offers an intermission, put him in the stable, take off the harness and let him stand an hour. Then offer him water, and in an hour again rub him off, harness, and drive on.

RULE 2. We prefer oats as a basis. In winter a little corn with it, perhaps, and sometimes a little wheat bran. In winter corn and oats ground together—no rye—or a little flaxseed meal with oats is excellent. Ground feed (corn, oats, and rye) makes fat on the ribs especially, and produces less muscle than oats.

RULE 3. If you jog your horse six miles a day, he does not need half the feed he will if you push him hard forty or fifty miles, as I frequently do. I feed eight quarts every day, ten if the trips are very many, and twelve or sixteen if the trips are many and long. Finally, let him rest at night before you feed him, at least one hour. And if he is very weary a two-hours rest is better; then water and feed. I prefer my night feed to exceed by a trifle that of the morning. This regimen prevents all possibility of foundering, and the horse has a better appetite.

I. W. Horton, truckman for the agricultural implement house of R. H. Allen & Co., Water Street, New York City, found a good deal of trouble, delay, and loss, as do all truckmen, occasioned by the noon feed. The teams would not only lose an hour during the best part of the day, but, by losing their places in the line during a rush at the

wharves, etc., there was a further and often great loss. Besides, over and above the unpreventable delay, it gave plenty of opportunity for dishonest loafing: the excuse, "Had to wait my turn," was always in order, and there was no way of questioning it. A noted horseman suggested the two-meal system, saying: "It is always safe; your horses will stand their work better by leaving out the noon meal, and you will avoid all unnecessary loss of time. It is just the remedy you require; and, moreover, will prevent disease." The plan was tried and found to work admirably. The best-conditioned animals maintained their condition, the others gained up under the treatment, and there were none to complain, except such of the men as wanted an opportunity to shirk. Of course, when truck teams have abundant rest, at odd times, during the day, they have no occasion for rest at any special hour when work is "rushing." In any event the *rest*, at noon, when horses are actually tired, is far better than a feed, for reasons heretofore given, and which must be self-evident to all expert physiologists, certainly evident to all observing men who have given the subject any special thought in connection with even a brief trial.

In summer, especially, this rule should be applied, to prevent all danger of exhaustion, or so-called sun-stroke.

DIET OF TRAM-WAY HORSES.

"It takes a tough horse to stand horse-car service," said the head man at the Third Avenue Horse R.R.

Company's stables. The feed here is eight pounds of hay and seventeen and a half pounds of corn and oatmeal, or between seven and eight quarts, the meal mixed with the cut and wet hay. These animals are, to be sure, fed three times a day; but the head man acknowledged that it is impossible, under the three-meal-a-day system, to avoid feeding when the animals are neither heated nor soon to be put to their hard work, though such avoidance would be a great advantage. The proposed system would solve this problem. But a suggestion to that effect elicited from the kind-hearted overseer the rejoinder: "A horse wants feeding as often as a man!" True enough; but here comes in the fact that hundreds of thousands of men—workers, too, not drones—have, for preventive or curative purposes, adopted the two-meal plan, and the sufficiency of this regimen has never been disproved. Many, indeed, have been forced to feed themselves thus, in order to enable them to continue their arduous labors. It is not what any creature swallows, but what he digests and assimilates, that sustains him.

It must be remembered that the horse and the man, although constituted very much alike, so far as their *needs* are concerned, speaking with regard to food, differ widely in their mental and emotional organizations. One has appetite only; the other appetite and reason—perhaps. A horse, jogging along the road, or working at the plow, will not have a mind occupied with visions of a dinner "on time." He becomes thirsty, as does his driver, and at sight of water

evinces a strong inclination for a draught. So, too, at the sight of food, he, like the man, will exhibit his desire for a lunch, in season or out—that is, for a little palate-tickling, whether food be needed or not. If his habit is to eat three meals, he will take four, and, if it is presented, take the second three hours after the first, instead of saying, like a man, “No, thank you, it isn’t my time!” Thousands of us have learned from experience that we enjoy more, and are better nourished by waiting full time. But as the “time” draws near, we begin to think about it, and thus work up an appetite, times without number, for a dinner which we do not need, but which is certain to make us feel uncomfortable. We find that thousands of men have adopted the two-meal, hundreds, indeed, the one-meal-a-day system, and find a great advantage in so doing. The principle that a man may adopt, from knowledge and conviction in the matter of his own diet, he may also extend to his horse; the latter does not require the convincement of his reason or intellect in the premises, but readily accepts his needed food in four, three, or two installments. In either case he will (on the four, as well as on the two-meal plan) accept a lunch at any hour, unless he has, from excess or some other cause, become “off his feed.” But, given enough (and this he should always have, to be sure), he will thrive and enjoy all that his nature makes possible. Give him too much (whether at two or more meals) and he must suffer for it. He can *digest* as much on the two-meal plan as on the three. Just as he can accom-

plish as much labor in a year, working ten hours a day, as he can by working fifteen, probably more. He can digest as much food as he needs and no more. Whatever the number of his meals, he can not *assimilate* any more than his system requires for the work he performs. Hence, it becomes a matter of the owner's judgment as to when and how often. Whoever tries this plan on himself, or on his horse, will not fail to be convinced of its sufficiency not only, but, as before remarked, of its advantages over any other system. For horses that work hard throughout the entire day, I repeat that the noon feed is altogether unphysiological. It is especially dangerous in summer. The time, however short, spent in eating, if devoted entirely to rest would do good. The food counteracts the advantages of the rest, and generates heat. A man who gives such a mid-day meal and then places a double-deck sun-shade on the top of his horse's head to prevent "sunstroke," may think he is doing the proper thing; but "it would make a horse laugh" if he knew what the thing was put there for!

MR. PLANT'S TESTIMONY.

Mr. T. J. Plant, at present assistant Superintendent at the American Express Co.'s Stables, 48th Street and Lexington Avenue, affirms that for fourteen years he drove express teams, feeding his horses but twice a day. "There was no time to feed at noon," he explained. The work was pretty sharp driving, none of our wagons were light, and the hours were long,

"but our horses kept in splendid condition all the time."

ANOTHER CASE.

Another young man, driver of an express team (rather an "unwilling witness," since he "didn't believe in the two-meal plan,") told me that he was once connected with a firm using over thirty horses that, as they learned subsequently, were cheated out of the dinners that were bargained and paid for. "We never could get one o' them hosses fat," said he. "They always looked lank during the day." "How were they 'on the muscle'?" I asked. "Well, you bet they never went back on us that way. They always acted spirited, and could pull anything they were hitched to!" "Were they ever sick?" I inquired. "No, it is a fact, that we didn't have a sick hoss all summer long, not even off his feed for a day!"* As every one knows, it is quite unusual for that number of horses to pass an entire season without a case of sickness. For example: At the stable referred to on page 92, I asked, "Have you other sick horses?" "Oh, yes, quite a number. There are always some,—colds, coughs, catarrhal fevers, off their feed, etc." To this the doctor made answer: "The best remedy for a horse that don't want to eat is to hitch him in a clean stall,—have no bedding, even—and let him wait till he will eat hay sharp. Then go slow with your feed!"

We find, from visiting a large number of

* They were well fed morning and night at home.

FIRST-CLASS STABLES,

both private and boarding—including Mr. Vanderbilt's, Mr. Bonner's, and Mr. Work's, that it is the invariable rule to feed hay* only at night,—generally at 5 or 6 o'clock, and from 6 to 8 lbs., according to the size of the animal, and the work: the harder the work the less hay, usually.

For grain, oats is the standard; in fact almost the exclusive feed. The daily ration is about the same, nominally, in all the stables visited, viz.: "Nine to twelve quarts, according to the work." But in almost every instance, we found that a "dose" of some kind, once or twice, generally twice, a week was deemed necessary, "to keep 'em cleared out," "to cool their bowels," "to prevent 'em from getting clogged up," "or else they'd get constipated," etc., etc., proving, as it seems to me, conclusively, that the diet exceeds the needs of the organism, or, in other words, that the sound old physiological mandate, viz., "In the sweat of thy brow shalt thou eat bread," is constantly and well-nigh universally violated!

THE ETERNAL MASH.

True, the "dose" referred to above is oftener than otherwise a mash; but what is a "mash"? Why, practically, what our best physiologists and hygienists are now sounding the alarm against, viz.: unmasticated and unmasticable food! At this time, when

* Stage and railway horses are fed cut hay with meal three times a day. We believe that this custom might be improved upon.

our soundest diétitians, among whom Dr. Oswald takes first rank, are warning the people against the soft-food-and-slops nuisance (more especially for the sick or ailing), and pointing to the better fed animals, as the horse, for example, that chews the dry grain, and thus accomplishes the only real mastication such as the starchy foods demand on pain of indigestion,—surely at such a time it would seem unwise in the extreme to carry this most unnatural practice into the stable, or to continue it if already there! When a horse is not in condition to take a natural diet—*i.e.*, to chew his own food and to warm and moisten it naturally,—prepared food of any sort will do him harm and not good. The stomach can not do the work of the mouth, nor, indeed, its own, when the first neglect has been suffered.

AT MR. BONNER'S STABLES

we ascertained that this noted horse fancier's animals, when doing fair work, received nine quarts of oats daily, three quarts at a feed. On any day, or succession of days, that an animal is not well-exercised, the night feed of oats is omitted. The total feed of hay is about 6 lbs., and is given about 5 : 30 P.M. The grain follows at 7 P.M.

Mr. Bonner's horses are watered before, not after eating.

The only criticism we have to offer in this connection is, that the fine condition of these animals would be maintained with less inconvenience, less occasion for special care during "working hours"—that is, dur-

ing the entire day, when a horse is liable to be called upon at any moment for a sharp drive—by feeding only morning and night. Then he may be speeded at any hour without danger.

While at

MR. BELLINGER'S STABLE

a boarder drove in, just from the Fleetwood races, having driven his mare the nine miles at a pretty sharp pace. The hour was 12:15 P.M. "Give her two quarts of oats," said he—"no more,—and let her breathe first. No water!" Now, this was a small feed, of course, but we think the gentleman made a mistake, since he directed the mare to be ready "on the floor at 1:15" (just one hour), for the return drive to Fleetwood. A few swallows of water immediately, and more half an hour later, with no grain at all, would surely have put the mare in the best possible condition for any amount of work during the afternoon.

AT MR. FRANK WORK'S STABLE

it was found that the usual *winter* diet was about six quarts of oats daily, which is less by three quarts than the summer feed. Mr. Curley, the polite and efficient head man, holds very sensible views upon feeding: "In summer, the horses are out of the stable more, do a good deal more work, sweat more, etc., and require more food." In the winter, on the other hand, with light work, and in warm stables, there is less waste, and, of course, less food can be digested.

AT SIXTH AVENUE HORSE-RAILROAD STABLES.

"Twenty-one pounds mixed feed a day is our feed, in summer; in winter, more,"* said the brusque but polite manager. "Fourteen lbs. oatmeal and 7 lbs. hay. In winter, we use corn and oats."

THE VETERINARY PRACTICE OF TO-DAY

corresponds very closely to the medical practice of one hundred years ago. Then bleeding was constantly resorted to in fevers, and, indeed, for most anything. There are still some doctors who practice it, but only the most ignorant, and in remote districts. But to-day this infamous practice is current, even in our largest cities, in the treatment of horses! I could hardly have credited this had I not myself seen a case in one of the largest stables in New York City. The veterinary surgeon in question is in regular practice, a really bright man, and under proper instruction would make his mark in the world. Yet I witnessed him perform two of the most barbarous operations upon a foundered horse, and when the depleting effects were plainly exhibited, he pointed to them with pride, as being "just what he aimed to accomplish!" It was just what he no doubt did accomplish every time. The history of the case, fully bearing out all that I have said about "soft" and "ill-conditioned" horses was this: The horse was a noble young fellow, a green one from the West, purchased from one of the

* These horses, unlike those in private stables, work as many hours, and have even harder work in winter than in summer.

best-known sale stables in this city. Fat as butter, he was taken to his new home, one of the largest and best stables in New York City. There they were afraid to put him directly at steady work, but they were not afraid to feed him! Although designing to feed rather light as compared with their old, hard-working horses, they still managed to founder him with food. The veterinary was called in (from the sale stable), and I witnessed the treatment. With every feeling of respect for the gentleman's good intentions and his more than average natural ability, combined with a pleasing manner, yet had the law and the customs of the country permitted, I would have arrested him for cruelty to animals. Aye, I would have fought then and there to prevent the abuse I witnessed. First, he lanced both arms, from which a smart fountain of the best blood the poor fellow had poured out in rapid streams for a sufficient time to fill, according to my best judgment, a three-quart pail from each wound. The professor next made an incision in the skin near the top of the shoulder-blade, and then proceeded to raise the skin by pinching each side of the slit, and lifting the skin so as to cause the space to fill with air, which mechanically-raised blister he pressed along downward and forward, following with another and another, until some scores of such had inflated the whole left breast, and up the shoulder toward the slit. Then he treated the other side in the same manner. There was then a complete blister over the entire chest and far up the shoulders; and all this as a "counter-irritant!" Soon, from the

effects of the bleeding, the poor dumb creature began to sweat. First a few drops oozed out, and dropped down from between the hind legs, then all along the belly, then a shower, whilst the trembling and working within and about the flank and abdomen were enough to indicate the condition of suffering. He was placed in a box stall, where he immediately laid down. The eyes, which were bright when he was led out, were now dim. I stroked his head, and he turned it toward me as if he knew, and wished to attest his appreciation of my feelings toward him. I left him when the poisoning began. As if mashing, purging, bleeding, and blistering were not enough! No, not enough! He must have some aconite thrust down his throat. The tub of cold water to stand in was the only really rational feature of the treatment in this case.

I have elsewhere given the general line of treatment for founder. I will conclude this by stating what should have been omitted in this treatment: He should not have been fed to make blood to be let out by the pailful. If not fed the purging would not have even *seemed* necessary. If he had not had mashes he would have had less fever (his temperature was $101\frac{1}{2}^{\circ}$ F.), and under hygienic treatment the fever would soon have left him altogether. Everything, except the tub of cold water for the feet, that was done was so much to the bad. Fifty years hence a veterinarian who should attempt to abuse a horse in the manner I have described would—not be shot at sight, because the world is steadily becoming more

charitable as it grows more enlightened, and so more dispassionate in its treatment of the ignorant or vicious; but such a man would be prosecuted for malpractice and turned out of the profession. Yet, to-day, I am forced to believe that this gentleman fairly represents the profession. Had this horse, fat as he was, been put, as soon as purchased, to steady work, and on a plain, natural diet, restricted to two meals and to an amount, altogether, that would have sustained him while the soft fat was being absorbed and cast off, and the muscles being made clean and full; had he been worked every day from the beginning, not beyond, but up to his strength, the latter would have increased every day and he would have been made over new, just as in the case described on page 24, without the least danger of founder.

Of course it is not to be imagined that a purge, a blister, the loss of a few quarts of blood, and the administration of a 15-drop dose of aconite—however depleting, however cruel—would end the life of a young horse that was “fit to survive!” Far from it. And so, three days afterward, this horse had apparently made good his loss. But it was a loss, all the same; a loss without the shadow of a gain, unless we put a value on the amusement afforded to the ignorant stable boys, and their wonder at the marvelous skill displayed by the veterinary surgeon, especially in making the patient full-breasted with an air-blister!

EATING THE BEDDING

is a very common complaint in all stables where any food substance is used for bedding. Few horses are sufficiently aristocratic to permit even musty hay or straw to lie within reach uneaten, unless the appetite has become less than perfect from excess. The "muzzle" has its uses in some of the finest horse palaces. It should be used upon occasion; but it is better to use bedding that is even less tempting than hay or straw that smells as bad as some brands of cheese that are in favor with certain gormands.

RULES THAT MAY BE SAFELY TRIED.

1. The diet for a road horse of 900 to 1,000 lbs. weight, averaging thirty miles, to wagon, every day in the week, and often pushed hard fifty to sixty miles or more in a day, would be 6 lbs. of hay and 9 qts. of oats, or, say, 6 to 12 qts., according to his work. If he be called on for fifty to sixty miles every day for any length of time, he might require 14 to 16 qts. of oats every day, with only a very small bunch of hay, say 4 to 6 lbs. For a 1,500 lb. horse, at moderate, but steady work, ten hours a day, six days in the week, 10 lbs. of hay and 8 qts. of oats (or 4 qts. corn and 2 qts. of oats) would probably be sufficient (see pages 65, 66, 67, 81, 82, 83).

2. Always increase the diet on the day *following* the extra hard drive—never on the day preceding, nor the very day: it is *to-day's* extra waste of tissue

that furnishes the digestive fluids for extra grain *to-morrow*.

3. The hay ration should not be increased with increased labor—only the grain. Indeed, in case of extraordinary exertion, covering several days in succession, especially when the usual hay ration is a heavy one, the hay may be, and often with advantage, lessened.

4. *Night Feed*.—Feed all the hay at night, say at 6 o'clock for horses not regularly worked until that hour or later, or feed hay an hour after coming to stable. Meantime offer water before the hay. In another hour feed the grain. If thirsty after eating hay, the horse should have a little water, then grain. After this the horse will satisfy his appetite with the balance of the hay, lie down and sleep the sleep of the just.

5. It is always safe to try two meals a day, and in proportion as a horse's work is constant and severe throughout the day this system is rendered more and more essential, for this reason, viz.: the horse of light work will have ample time to digest a mid-day lunch and it is a matter of comparative indifference whether his proper allowance is divided into two or three portions. But in the case first supposed, a middle meal is impossible without a violation of the rule which most persons agree in considering desirable, and which we hold to be imperative, viz.: the rule relating to rest before and after eating.

6. Referring to rule 1, it may be remarked that, in proportion as the work is lessened, the hay ration

may be increased and the grain lessened ; or, straw used, in part, in place of hay ; or, again, meal with the cob ground in.

7. If 200 miles of sharp roading, weekly, demand 9 qts. of oats a day, 4 qts. would be ample for a horse jogging ten miles a day. If the latter have an extra day's work of, say, twenty-five to forty miles, he might be benefited by, say, 4 qts. of oats extra on the succeeding day. If *fat*, no increase would be demanded ; he would be better without.

8. *Thirst*.—Of the two appetites, thirst is the least apt to be abnormal, and hence the safest to satisfy. Except when heated, and speaking generally, a horse should drink as often and as much as he wants. If not overfed he will not be overthirsty. However hot, a little water should always be allowed ; then, after a fair interval, more, and, at last, all he wants. No demand is so imperative, none causes so much pain and danger from being denied, as the demand for liquid food—water. A horse would continue to *live*, and without suffering pain, for many days without solid food, but not without drink.

9. *Constipation*—*i. e.*, the accumulation of fœcal matters, that harden and are passed with difficulty—indicates indigestion. It may arise from (1) deficient exercise, as relates to quantity of food, or (2) a violation of the rule we have so urgently put forth ; that is, the horse may have been often driven on a “full belly,” or fed too soon after his drive.

10. A horse that was being underfed, might have very little pass his bowels—nothing, if he was being

starved—but this is not what is meant by “constipation.” If persistently underfed, he will steadily fall off in weight—emaciate—never remain at a standstill. Mr. John Griscomb, of Chicago (outdoing Dr. Tanner the year after the latter’s fast), during his forty-five days’ fast, had no passage at the bowels at all. He declined in weight at the rate of one and one-fourth pounds a day; that is, he consumed that amount of his own flesh. He suffered no pain, felt no weakness, was quite active every day. He drank about one and one-half quarts of water daily.

11. Never “dose” a horse, with medicine, or mashes, hot or cold, to get the fever out of him, nor for any special purpose, whatever.

12. If *constipated*, give him more work or less feed; or correct the manner of feeding, if wrong.

13. If he “scours,” (always a symptom of indigestion), skip a meal, or two if necessary, allowing all the drink he wants. This is always safe on an empty stomach and when not heated with work.

14. If *feverish*, allow plenty of water, plenty of air, but no food—none at all.

15. “If off his feed, let starvation be the cure,” to use the language of a veteran. “Any creature will come to his appetite sooner, and with less loss of flesh, by this means,” he continues, “than by any sort of medication or nursing.”

HOW TO ARRANGE THE CHECK-REIN.

If horses could only *talk*, and then if all men could *feel*, few check-reins would be used. See that hand-

some fellow—how he tries to ease an aching neck! Hitch, hitch, hitch, first to one side, then the other; then up he tosses his head for a change, then sharp down upon the bit. He *is* talking, and every thoughtful observer knows that the noble creature is saying, “Will you please unhook the check-rein?” There, now, watch him. How he stretches out his neck to get the cramps out of it! How good it feels. He rubs his face against you. It is his way of saying, “Thank you—no one knows, unless he has himself been strung up that way, how very painful it becomes!” Try it, my friend, and see how it is yourself, to use a current phrase. “Don’t check *your* horses very high?” But why at all? Keep them in fine condition, so that they will feel good all the time and they will carry their heads right—at least naturally. Some horses are naturally high-headed. But you can’t make one so by stringing him up. Every one can tell whether a horse is strung up by the bit; and every kind-hearted person pities him, if he is. Oh, take it off—don’t wait a day.

A WORD ABOUT THE BLINDERS.

Take off the blinders, too; give a horse his eyes and he gets accustomed to all manner of sights and nothing troubles him. Withhold them and, half blind, he is constantly nervous—fearful of something that would not disturb him in the least if he could see it. That is, if he is a nervous fellow; if not, then there is no excuse for the blinders.

INTRODUCTION TO PART II.

THE author regrets his inability to add his own testimony to that of Sir Geo. W. Cox, first printed in this country in the *Popular Science Monthly*, feeling, indeed, a sense of shame, not because anything he might say could add one whit of weight to what is so well put forth (and so ably commented upon by Col. Weld), but, to think that he has up to the present time made one of the million who so *cruelly*, constantly, thoughtlessly, and needlessly abused this noblest of animals, the horse! The abuse is rendered a thousand-fold worse in that, generally speaking, the poor creatures are at the mercy of a class—I had almost said a race—of people as willful as they are ignorant—the class of whom it was said by an exceptional one of the fraternity: “Generally, when there is a boy in the family who is too big a fool for anything else, his father makes a blacksmith of him!”

C. E. P.

HORSES AND THEIR FEET.

BY SIR GEO. W. COX.

IF we say that of all brute animals none is more valuable to man than the horse, and that the neglect of any means which may promote and ensure his welfare and efficiency is a blunder not easily distinguishable from crime, we may fairly be charged with uttering truisms. If we urge that this value is not recognized as it should be, and that this neglect is miserably common, we may still be accused of wasting breath on statements which no one would think of calling into question. Every one, we may be told, is well aware that the management of horses is very faulty, that their lives are shortened by the ignorance of those who have charge of them rather than by any wanton cruelty, and that they are rendered practically useless long before their existence is brought to an end. To the plea that the same, or much the same, things may be said of men as of horses, we may answer that the blame must be apportioned to the degree of carelessness with which evils affecting either men or horses are allowed to go on unchecked or are foolishly dealt with; nor can failures to improve the condition of mankind furnish a reason for

refusing to do what may improve the condition of horses. Our duty ought to be discharged at all costs and under all circumstances; but a man must have risen far above the average of his fellows if he feels no relief when his duty coincides with his interest. Something is gained by the mere pointing out of this agreement, wherever it exists; and we must remember that, if a vast amount of human wretchedness is the direct result of willful and wanton perversity, we can meet with no such resistance on the part of brute beasts. With regard to these we have only to see what the evils are; and the blame is ours, and ours alone, if we fail to apply the remedy, when the remedy, if applied, must be successful. In the case of the horse, unhappily, we do not realize the extent of the mischief, and seldom, perhaps never, fix our minds on its cause or causes. Yet the facts, even when reduced within limits which none will venture to dispute, are sufficiently startling.

The number of horses in the United Kingdom has been estimated at rather more than two millions and a quarter, and their average value can scarcely be set down at less than £30. Their collective value, therefore, falls little short of sixty-eight million sterling. That the nation incurs a loss if this sum is spent quicker than it needs to be is a self-evident proposition; that it is so spent is certain, if horses on an average become useless at a time when they ought still to be in full vigor. On this point few will be disposed to challenge the verdict of Mr. W. Douglas, late veterinary surgeon in the 10th

Hussars, who tells us that a horse should live from thirty-five to forty years, and live actively and usefully during three-fourths of this period. "All authorities," he says, "now admit that animals should live five times as long as it takes them to reach maturity. A dog, which is at its full growth when between two and three years old, is very aged at twelve years. Horses do not, unless their growth is forced, reach their full prime until they are seven or eight years old, which by the same law leaves them to live some thirty years longer. When these facts are kept in mind, together with these other facts that three-fourths of our horses die or are destroyed under twelve years old, that horses are termed aged at six" [he should have said eight], "old at ten, very old when double that number of years, and that few of them but are laid up from work a dozen times a year, . . . the viciousness of a system which entails such misery and destruction of life can not be too strongly commented upon." If we take the age of three years as that at which horses begin to work, and twelve as that at which they are worn out, it follows that the period of their efficiency is shorter by at least fourteen years than it should be. In other words, the nation has to buy three horses when it ought to buy only one; and thus upwards of £200,000,000 are spent every twenty-one years in the purchase of horses when £68,000,000 ought to suffice. The loss, therefore, to the nation is at least £135,000,000 in twenty-one years.

If this were all, the question would surely be most

serious; but it is not all. Unless the facts thus far stated can be set aside, our horses work on the average seven or eight years; but how do they work? The collective experience of the country will answer that the work is done at the cost of frequent interruption, and with an amount of discomfort and pain which often becomes agony. It is easy to say that much of the evil must be laid to the charge of grooms and stable-men; and perhaps the censures dealt out to these men are not undeserved. They are, at least, outspoken. In the last century Lord Pembroke spoke of grooms as being "generally the worst informed of all persons living." "No other servant," says Mr. Mayhew, "possesses such power, and no domestic more abuses his position. It is impossible to amend the regulation of any modern stable without removing some of this calling, or overthrowing some of the abuses with a perpetuation of which the stable servant is directly involved." In this state of things the most humane of masters becomes, he adds, an unconscious tyrant to the brute which serves him so well. It is a miserable fact that grooms on their own responsibility are in the habit of administering secretly to horses medicines the cost of which they pay themselves. It may fairly be said that in every case the remedy is ill-judged, and creates worse mischief than that which it is designed to remove. Among these medicines arsenic, antimony, and niter seem to be the favorites, but the list of remedies is not ended with these. The experience of ages, if it has failed to do more, has impressed on them the fact

that the chief source of the sufferings of horses is to be found in the foot. The suspicion that the foot is not treated rightly by the traditionary method never enters their minds; and they deal with the limb not from a knowledge of its anatomy, structure, and purpose, but in accordance with the popular notions, which are, in plain speech, outrageously absurd. In profound ignorance that the hoof is porous, they apply hoof-ointments, which answer to cement plastered on a wall. If these were in constant use, Mr. Douglas asserts emphatically that not a morsel of sound horn would remain at the end of six months, on the horses, and shoeing would become an impossibility. If the groom be told that he is thus preventing the internal moisture from reaching the outer surface and the air from circulating inwards, his only answer is an incredulous laugh. His conviction is that the hoof should not come into contact with hard material, and that the horse can be best fitted for his work by having his feet smeared with tar, beeswax, or tallow, and by resting always on a heap of litter in the stable. It would be of little use to cite Lord Pembroke as declaring that "the constant use of litter makes the feet tender and causes swelled legs; moreover, it renders the animal delicate. Swelled legs may be frequently reduced to their proper natural size by taking away the litter only, which, in some stables, where ignorant grooms and farriers govern, would be a great saving of bleeding and physic, besides straw." "I have seen," he adds, "by repeated experiments, legs swell and unswell by leaving litter

or taking it away, like mercury in a weather-glass"; and his experience is confirmed by the general condition of troopers' horses in contrast with those of their officers, which are bedded down all day.

But if there are evils for which grooms are, in large measure, directly responsible, and the abolition of which they would beyond doubt stoutly resist, there are others in which masters are not less blameworthy than their men, and from which the public generally, as well as the animals, are constant sufferers. The work of the horse is that of dragging and carrying, and the aim of the owner should be the accomplishment of this work with the utmost possible sureness and with the fewest accidents. Serious and fatal injuries may be the result of stumblings and slippings, not less than of actual falls; and the premature wearing out of horses by excessive straining of their sinews and muscles is a direct pecuniary loss to the owners, although few of them seem to realize the true significance of the fact. These evils are to be seen everywhere, and they affect horses kept for the purpose of pleasure and ostentation almost as much as those which spend their days in a round of monotonous drudgery. A horse should not be obliged to work in going down a hill, but, in fact, they are subject to the severest strain just when they ought to have none, if they are harnessed to springless carts or wagons without brakes. Farm horses suffer with terrible severity from this cause, but the horses used in carrying-trades and by railway companies undergo a more cruel ordeal. Improvements in the brake-

power of wagons used on roads, which might greatly lessen the mischief, are not made, and hence the horses are seldom free from diseases more or less serious which may be traced directly to constant slipping and shaking over slippery pavements. Among ignorant owners, blind to their own interests, there is an impression that "the work which kills one horse will bring in money enough to buy another"; but experience has sufficiently shown the fallacy of this theory, whether the overtaxed slave be a horse or a human being. In towns and cities, the roads are and must be paved, and the pavings at present are variously of stone, wood, or asphalt, where the road is not macadamized. These pavements have, it would seem, each its own peculiar dangers for the horses which use them, and each has thus become a fruitful source of controversy. If any one method be likely to supersede the rest, the victory will probably be for the asphalt; but horses are found to slip seriously upon it, and the falls so caused are, we are told, of a graver kind than those on pavements of other sorts. All the proprietors of cabs, omnibuses, and railway vans have, it is said, protested in a body against its use, but scarcely, it would seem, to good purpose. Fresh contracts have been signed for pavements of asphalt, and others will probably follow. In the meanwhile horses have to pass, perhaps in a single morning, from macadamized roads to roads paved with asphalt, wood, or stone—in other words, over roads made of widely different materials, which call in each case for a different action of the foot. On the other hand the hoof

is supposed to be protected by shoes, the varieties of which are legion; and thus the controversy has been brought to a singular issue. On one side it is urged that there should be a uniform system of paving enforced on all towns, so that horses should no longer pass from a less slippery road to one that is more slippery; on the other the contention is that the true remedy lies not in uniformity of paving, but in the discovery of a shoe which shall effectually prevent the horse from slipping anywhere. The former alternative is visionary; the latter has been, and perhaps it may be said, still is, the object aimed at by some who have a thorough acquaintance with the structure of the horse, and the most disinterested wish to promote his welfare. We may, therefore, safely pay no heed to the lamentations of those who believe that "the difficulty in riding or driving through the London streets arises from the variety of the pavements in use," and that "if we had a uniform kind of pavement, a shoe for universal use would be quickly invented." We may please ourselves with fancying that "the ingenuity of man would devise horseshoes to travel over glass, were glass the only pavement in use." The main question is, whether mankind after all has not been forestalled in this invention; and it is absolutely certain that those who have labored most conscientiously to improve the shoeing of horses, have striven especially to secure for them the power of moving safely over materials of many kinds. These men have been convinced that the traditional methods overload the foot of the horse with iron,

and that the modes of fastening on this iron interfere with, if not altogether obstruct, the processes of nature. The efforts of all have been directed toward diminishing the weight of iron, and this has led them to the conclusion that the less the natural foot is interfered with the better. M. la Fosse thus inferred that one-half of the ordinary shoe was unnecessary, and that nothing more was needed than a tip on the front half of the foot. Unfortunately he directed that the heel should be pared, thus making it weaker, and he fastened on his tip, which had about six inches of iron in its entire length, with eight nails. He was thus "inserting wedges, amounting in the aggregate to from one to one and a half inches in thickness, in six inches of horn, thus squeezing it into the space of five or even four inches, and killing it from the clenches downwards and outwards." It is strange that veterinary surgeons, who have clearly comprehended the mischief thus caused, have failed to draw the logical inference from their premises. Mr. Douglas was aware that the crust of the horse's foot resembles in its natural state a number of small tubes, bound together by a hardened, glue-like substance, and he compares it to a mitrailleuse gun with its many barrels soldered together. By his way of nailing, M. la Fosse was reducing the size of each tube by one-sixth, or rather was entirely closing those nearest the nails, and compressing those that lie half-way between each pair of nails. He was, in this respect, aggravating the mischief of the ordinary shoe, which commonly has seven nails, and this ensured dryness and

brittleness of hoof. But the circulation of fluid through the pores of the hoof is not the only natural process which modern shoeing interferes with. In his work on the horse's foot, Mr. Miles illustrates the expansion and contraction, which always take place in its natural state when it is set down on and lifted from the ground. The subject was a horse nine years old, which had the shoe removed for the purpose of the experiment. "The unshod foot was lifted up, and its contour traced with the greatest precision on a piece of board covered with paper. A similar board was then laid on the ground, the same foot was then placed upon it, and the opposite foot held up whilst it was again traced. The result was that it had expanded one-eighth part of an inch at the heel and quarters." Over two inches on each side of the center of the toe no expansion had taken place, the tracings showing that the expansion was only lateral. It would follow that a shoe intended to give full play to this process must be confined to the part where no expansion takes place; but Mr. Miles adhered to the form of the ordinary shoe, although he reduced to three the number of nails by which it was fastened. The object of this process of expansion and contraction is to give the animal a firmer hold on the soil, and to enable him, where this is thick, slimy, or sticky, to withdraw the foot easily on contraction. This purpose is necessarily defeated when the whole foot is armed with iron.

No one has condemned the mischievous working of the existing system more strongly than Mr. Mayhew,

who refuses to allow that the body of the horse was made stronger than his legs and feet, and holds that these, if left to themselves, must be adequate to the tasks imposed on them. In his belief "it is amongst the foremost physiological truths that Nature is a strict economist," and that "man has for ages labored to disarrange parts thus admirably adjusted. . . . No injury, no wrong, no cruelty can be conceived which barbarity has not inflicted on the most generous of man's many willing slaves." But although he has thus seen "the folly of contending against those organizations which govern the universe," he still thought that the employment of some sort of shoe might not lie open to this charge. Shoes of some sort may give to the horse the freedom which is essential for the health of the foot, although he insists that all the shoes thus far used are lamentable failures. "There are," he says, "many more pieces of iron curved, hollowed, raised, and indented than I have cared to enumerate. All, however, have failed to restore health to the hoof. Some by enforcing a change of position may for a time appear to mitigate the evil; but none can in the long run cure the disorder under which the hoof evidently suffers." Such language, it might be thought, could come only from one who had discarded the use of shoes altogether. All, however, that Mr. Mayhew has done is to point the way to the road which he was not prepared to take. But the experience of Miles and Mayhew, La Fosse, Charlier, and Douglas seems to lead by necessary logical inference to one conclusion only. If the

working of the traditionary system leaves the horse a wreck almost before he has reached his prime, if the lessening of the weight of iron and of the number of nails used in fixing the iron has been followed by direct and important benefits in every instance, if even those who hold that a horse must be shod have discovered that that which they look on as a protection to the fore feet is merely harmful to the hind feet, is it possible to stifle the suspicion that this insignificant remnant of a system so fruitful in mischief may have no magic power, and, in short, that the horse may do just as well without them?

This conclusion has been courageously avowed and most ably enforced by a writer calling himself "Free Lance" in his recently published work on "Horses and Roads"; and to say the least, it is time that the whole question should be fully and impartially considered. It affects the wealth of the nation, and on it depend both the usefulness and the comfort of a race of noble animals which are indispensable to our prosperity. The force of prejudice may be great, and a widespread traditional system may not be soon or easily overthrown; but it can not for a moment be supposed that Englishmen generally will assume with reference to it an attitude of unreasoning and obstinate antagonism. Fear probably will be found to supply a restraining motive more powerful than open ill-will. Many who think that the new theory may look well enough on paper will doubt its value in practice, and will regard their own horses as exceptions to which it can not apply. With a strange ignorance of fact, they

will insist that unshod horses may move safely over smooth and soft ground, but must fail when it is rugged, and hard, and stony, or will be oppressed by a vague dread that a horse which has gone well enough without shoes for six months may break down in the seventh. But even those who refuse to give up the practice of shoeing will yet acknowledge its faultiness, and wish that they could give it up without risk. To all such we need only say that if they have any regard for impartiality they are bound to consider the arguments and the facts on which the conclusions of "Free Lance" rest; and most assuredly they will find in his pages nothing which they may charge with extravagance, rashness, and intolerance. They will not be told that unless they abandon the system of shoeing altogether they can effect no improvement in the present state of things, or even that they must hasten to change the old system for the new. On the contrary, they will find that they are again and again warned against imprudent haste, and are told that a vast amount of good may be achieved even if they never venture on leaving their horses' feet in a state of nature.

Of these arguments and facts it might be difficult to determine which are the most important and significant. Certain it is that our horses generally are afflicted with a multitude of diseases which seize on their legs and feet, and that lameness is everywhere a cause of constant complaint and of loss of time and money. The author is not speaking from theory or from book, but takes his stand on an experience

obtained during a sojourn of many years in foreign countries, especially in America, where in the construction of railways and other public works he had to employ hundreds of horses and mules on tasks which taxed their capabilities to the utmost. In Mexico, Peru, Brazil, and elsewhere he found that unshod horses were daily worked over roads of all kinds, carrying heavy packs from the interior down to the coast, the journey thither and back being often extended to several hundreds of miles, and that they accomplished these journeys without ever wearing out their hoofs; and the roads in these countries, where they exist at all, are neither softer nor smoother than those of England or of Ireland. If horses fell lame it was from causes incidental to the climate, and for these the system of shoeing would supply no remedy. From other diseases, which from strong and often incontestable reasons may be traced to the use of shoes, they were wholly free. The necessary conclusion was that the system of shoeing could answer no good purpose, while it might be productive of much harm; and in this conclusion he was confirmed by the admissions and protests of the most able and competent veterinary surgeons in this country. These have uniformly raised their voices against the heavy weighting of the horse's foot maintained by the traditional practice. It has been found here that the hoofs of some horses are so weak that they can not be fully shod; and a writer in the *Field*, styling himself "Impecuniosus," cited some ten years ago a remark by Mayhew that "some horses will go

sound in tips that can not endure any further protection," adding the significant comment that the moral of this is "that it is the shoe, not the road, that hurts the horse"; for if a weak and tender foot can go sound when all but unshod, "why should not the strong sound one do the same?" The conclusion, as he insists, should rather be that a horse must have a strong, sound foot to stand not our work, but our shoe. The same writer, speaking of the cruelties unwittingly perpetrated by grooms and blacksmiths on the horse's foot, says that "though lameness usually attends their efforts, they ascribe it to every cause but the right one, and indeed resign themselves complacently to the presence of many diseases confessedly caused by their treatment." "Free Lance" has seen, and others also have doubtless seen, light horses, of high breed and value, shod or burdened with a full set of shoes in which eight nails, nearly three-sixteenths of an inch in thickness, were driven four in each quarter, and in a space of three inches for each four nails. He may well call attention to the immense amount of laceration and compression which the delicate hollow fibers of the crust must have suffered when thus wedged up within a fourth of their natural dimensions. Besides this, he adds, the hoof was, in one instance, carved out on the crust to receive three clips, one on the toe and one on each quarter. "A calk, three-quarters of an inch high, was put on one heel of each hind shoe, and on the other heel a screw cog of equal height. On each front shoe a cog, also three-quarters of an inch high, was put upon each

heel. This wretched victim to fashion was then regarded with the utmost satisfaction by the farriers and his groom; and all this heathenism was perpetrated in the forge of a veterinary surgeon. But, perhaps, he was shoeing to order."

Amongst the reformers of these great abuses M. Charlier occupies a prominent place. His shoe in its first shape was not successful. Starting rightly on the assumption that nature intended the horse to walk barefoot, and that the bottom of his foot was in every way fitted to stand all wear and tear, he excepted from these self-sufficing parts the outer rim, that is, the wall or crust. "He, therefore," "Free Lance" tell us, "made a shoe of very narrow iron, less than the width of the wall, which he let in, or imbedded, to the crust, without touching the sole even on the edge, so that, in fact, the horse stood no higher after he was shod than he stood when barefooted. He urged that such a narrow piece of iron would not interfere with the natural expansion and contraction of the foot; and in this he at once went wrong, for malleable iron has no spring in it. Then, in spite of his theory, as he expressed it, he carried his shoe right round the foot into the bars, beyond where the crust ceases to be independent of them. He then got a very narrow, weak shoe, about a foot in circumference (if circumference can be applied to that which is not a complete circle); and, as he ought to have foreseen, the shoe then twisted or broke on violent exertion." Still, as freeing the horse from a large amount of the weight usually attached to his foot,

the change was an important benefit; and the lesson thus taught was not thrown away. The shoe was reduced by a man at Melton from the full to the three-quarter size, and in this form it weighs five ounces. Seeley's patent horseshoe, adopted by the North Metropolitan Tramways Company, weighs one pound and a quarter, this being a reduction of one-half on the weight of the ordinary shoe; and we have to remember that each additional ounce on the horse's foot makes a most sensible difference in the amount of work performed by him during the day. Shoeing their horses on the principle of the modified Charlier shoe, Messrs. Smither & Son, of Upper East Smithfield, have found the result marvelously to their advantage in the measure of comfort and safety with which their animals do their work, whether in the London streets, on pavement, or on country roads. So far as their experience has gone, there are no horses which it does not suit, and it is of special service for young horses running on the London stones, and for horses with tender feet or corns, and to prevent slipping. In other words, the absence of metal confers benefits which can not be bestowed by its presence. Facts in America teach the same lesson. At a meeting of the Massachusetts Board of Agriculture in 1878, Mr. Bowditch, a practical farmer, declared that "nine hundred and ninety-nine thousandths of all the trouble in horses' feet come from shoeing," that he was in the habit of driving very hard down hill, that he had galloped on ice on a horse whose feet had merely a small bit of iron four

inches long curled round the toe, and that this piece of iron is all that is needed even in the case of an animal whose feet have been abused for a series of years. When nothing is left but this fragment of the traditional shoe, and when even this fragment has, as in Massachusetts and elsewhere, been retained for the fore feet only, it is incredible that men should fail to ask what the use of this relic of the old system may be. Donkeys in Ireland are unshod, and they work on roads at least as rough, hard, slimy, and slippery as those of England. "Can one really believe," asks "Free Lance," "that the animal which is endowed with the greater speed and power should have worse feet than his inferior in both respects?" To such a question one answer only can be given; and the lesson may be learned by any one who will take the trouble to go to the wilds of Exmoor or Dartmoor. There, as in the Orkneys and on the Welsh hills and in many parts of the continent of Europe, horses run unshod over rocks, through ravines, and up or down precipitous ridges. "Yet all this," Mr. Douglas remarks, "is done without difficulty, and to the evident advantage of their hoofs, for these animals never suffer from contracted feet, or from corns, sand-cracks, etc., until they become civilized and have been shod." Mr. Douglas, it is true, holds that civilization involves the need of a shoe of some sort for horses as for men; Mr. Mayhew advocates the use of the tip, and, as we have said, it is not in human nature to stop short at such a point as this. It is obvious that if the complete abandon-

ment of iron is followed by increased efficiency and power of endurance on the part of the horse, as well as from a number of painful and highly injurious diseases, the owner is directly and largely benefited in more ways than one. His horses live in greater comfort, and for a longer time ; his veterinary surgeon's bill and the outlay for medicine are greatly lessened, and the costs of farriery disappear altogether.

Farriers will of course complain that their occupation is gone, and that they are ruined men ; but little heed was paid to like pleas when they were urged for the drivers and attendants of coaches and coach horses when the first railways were constructed. Matters will adjust themselves in this case as they did in the other. But that the change can not be effected in a day or a week, no one will venture to deny. The feet of horses are ordinarily treated, not wantonly, but through ignorance, with a cruelty which is simply shocking. With vast numbers of animals which are not kept for purposes of drudgery and in whose appearance their owners feel a pride, the hoof is a mere wreck, and the sight of the mangled and split hoof may well excite not merely pity, but wonder that any can passively allow such evils to go on. A few, however, will always be found with resolution enough to shake off the fetters of traditionalism ; and some of these have already expressed their opinion with sufficient emphasis. One of these, writing in November, 1878, says :

"The argument against horseshoes seemed to me so strong, and the convenience of doing without

them so great, that I resolved to try the experiment. Accordingly, when my pony's shoes were worn out, had them removed, and gave him a month's rest on grass, with an occasional drive of a mile or two on the high-road while his hoofs were hardening. The result at first seemed doubtful. The hoof was a thin shell, and kept chipping away, until it had worn down below the holes of the nails by which the shoes had been fastened. After this the hoof grew thick and hard, quite unlike what it had been before. I now put the pony to full work, and he stands it well. He is more sure-footed, his tread is almost noiseless and his hoofs know no danger from the rough hand of the farrier, and the change altogether has been a clear gain, without anything to set off against it. The pony was between four and five years old, and had been regularly shod up to the present year. He now goes better without shoes than he ever did with them."

A well-known Cumberland farmer, writing about the same time, speaks of a farm horse in his possession, which, having been lamed by a nail driven into its foot, had been for many months in the hands of the farrier. Tired out with this annoyance, the owner had his shoes taken off and turned him out to pasture. While still rather lame, the horse was set to work on the land; and he is now, we are told, "doing all sort of farm work, and dragging his load as well as any shod horse even over hard pavement." If judgment based on knowledge is to carry weight, the question would soon be settled. We have already seen the

opinions expressed by the most able writers on the horse, and especially on the structure and treatment of his feet, as well as by the best veterinary surgeons. The verdict of the *Lancet* is almost more emphatic. "As a matter of physiological fitness," it says, "nothing more indefensible than the use of shoes can be imagined. Not only is the mode of attaching them by nails injurious to the hoof, it is the probable, if not evident, cause of many affections of the foot and leg, which impair the usefulness and must affect the comfort of the animal." If we add that the hunter is benefited almost more than other horses by being allowed to use his feet as nature made them, the admission is made in the interests of the horse and not as an expression of opinion on the controversy respecting the right or the wrong of fox-hunting. It is enough to say that for horses which have to move rapidly, and to come down with a sudden shock on sticky and slippery ground, the natural course of the process of expansion and contraction is of the first importance. For those who may care nothing for the gratification of hunting men, it may be amusing or provoking to learn that in times of hard frost hunters have been enabled to chase the prey by the aid of gutta-percha soles fastened to the feet; but all who are anxious only for the welfare of the horse will see in this fact strong evidence of the uselessness of the iron shoe. The plain truth is that differences in the quality of soil, be it hard or soft, stony or sandy, smooth and slippery, are of comparatively little importance to the horse whose feet

are as nature made them. In the words of "Free Lance," "the unshod horse can successfully deal with all roads"; and assuredly no one will dream of asserting that shod horses can do this, for on the setting in of frost, for instance, they can not be worked until certain ceremonies have been gone through at the blacksmith's forge. The unshod horse can tread firmly on the slime of wood pavement when shod horses are slipping and struggling in agony around them; he can gallop on ice, and trot for miles together on the hardest and roughest flint roads, with far more ease and comfort than horses whose feet are shod with iron, or even with gutta-percha. "Free Lance" rightly remarks that "if they could not, there would be an end of the thing, for evidently the horse should be able to go anywhere and everywhere, and at a moment's notice." It seems hard to produce the conviction that the natural sole of the horse's foot is almost impenetrable, that it is so hard and strong as to protect the sensible sole from all harm, and that all feet exposed to hard objects are made harder by the contact, provided only that the sole is never pared. This adequacy of the horse's foot to all demands that may be made upon it is forcibly illustrated by Mr. Bracy Clark, who, like Mr. Douglas and Mr. Mayhew, contented himself with striving to produce a perfect shoe, although he acknowledged that if we wish to appreciate the full beauty of its structure, "we must dismiss from our views the miserable, coerced, shod foot entirely and consider the animal in a pure state of nature using his foot

without any defense." Probably Mr. Clark thought that, though we may consider it in its natural state, few can ever so behold it, as all horses in civilized countries are in greater or less degree brought under artificial conditions. The plea is fallacious. The horse is clearly intended by nature to serve as a domesticated animal; and so long as we do not interfere with the proper functions of any part of its body (and the abomination of bearing reins and other such practices interfere with them grievously and even fatally), we bring it under no conditions which it was not designedly calculated to encounter. Private owners and companies whose horses must be numbered by troops are naturally irritated by the accidents constantly occurring on smooth and slimy pavements or on rough and hard stone or flint roads, and in their disgust they now offered rewards for the invention of a shoe which shall render the horse indifferent to the materials over which he has to pass, and have clamored for a uniform system of pavements in all towns. It seems strange indeed that no mis-giving seems to cross their minds that they are taking thought of the wrong surface, and that they are scared by false terrors when they dread the contact of the unshod hoof with sand, granite, flint, wood, or asphalt.

It can not, indeed, be too often repeated or too strongly insisted on, that the foot of the horse in no way needs to rest on soft and yielding surfaces. The very opposite of this is the truth, and this truth was perceived as clearly by Xenophon as by the

ablest physiologists of our own day. Speaking, as he says, not from theory, but from wide and varied experience, Xenophon insists that in order to ensure the healthiness of horses, stable floors must not be smooth or damp; that they should be lined with stones of irregular shapes, of much the same size as the animal's hoof, and that the ground outside the stable, on which it is groomed, should be covered in parts with loose stones laid down in large quantities, but surrounded by an iron rim to prevent their being scattered. Standing on these the horse, Xenophon adds, will be in much the same condition as if he were traveling on a stony road, and as he must move his hoof when he is being rubbed down as much as when he is walking, the stones thus spread about will strengthen the frogs of his feet. It is not easy to repress a certain feeling of shame at the disingenuousness of modern writers who have tried to shirk the difficulty by saying that Xenophon had no knowledge of our hard roads. It is enough to reply that he speaks distinctly of roads covered with stones, and of the benefit which the horse derives from traversing them. There is not a word to justify a suspicion that he would have shrunk from the hardest roadway of modern times. Xenophon is thus in complete agreement with Lord Pembroke's remark that the constant use of litter in a stable makes the feet tender and causes swelled legs. In his judgment the bare stone pavement will cool, harden, and improve a horse's feet merely by his standing on it. Acting on the same principle, Vegetius, as "Free Lance" re-

marks, holds that the floor of a stable should be made, not of soft wood, but of solid hard oak, which will make the foot of the horse as hard as a rock. It should surely be unnecessary to say that these writers make not the remotest reference or allusion to the shoeing of horses. It was impossible that they could notice a practice which was unknown to the ancient world, and which is in truth simply a modern, as it is also a most uncalled for, barbarism. No iron helped to produce the heavy sound of solid horn which Virgil ascribes to the fiery steed of Pollux. Of late years we have heard much of the unjustifiable waste of time spent on classical literature which has no practical bearing on the interests of modern life. It is unfortunate that Xenophon's treatise on the management of horses has not formed one of the subjects for the upper forms of our public schools; and it would be well if they were made to read with care a book written by one who wrote unfettered by the restraints of any traditional system, and who successfully brought the cavalry as well as the infantry of the Syrian army of Greeks from the plains of Babylon to the shores of the Euxine. There they would see how thoroughly the rules laid down by the leader of the Ten Thousand for the selection and the management of horses are in accordance with the highest scientific knowledge of the present day, and how happy an ignorance he displays of the long and dismal catalogue of diseases and miseries which a wrong-headed and ridiculous system has called into existence. No horses could be subjected to a more severe strain in

every limb of their body than were those which Xenophon led from Cunaxa over the Armenian highlands to the walls of Trebizond; yet we hear nothing of any special difficulties arising from diseases of the foot or leg. It may probably be said with truth that the strain endured by those horses could be borne only by unshod animals. Paul Louis Courier, the French translator of Xenophon's treatise, was so struck by the apparent soundness of his method, that he put it to the test by riding unshod horses in the Calabrian campaign of 1807, and he did so with complete success. But that which with him was a voluntary experiment has been for others an involuntary necessity. This was the case with many of our cavalry horses during the Indian Mutiny, and their riders have declared that they were never better mounted in their lives. In the retreat of the French from Moscow the horses, "Free Lance" remarks, lost all their shoes before they reached the Vistula; yet they found their way to France over hard, rough, and frozen ground. In his invasion of America, Cortes could not carry about with him the anvils, forges, and iron needed for shoeing even the small number of horses which he had with him. But these horses did their work and survived it, and from them comes the fierce mustang of Mexico, which still goes unshod. There is great force in the remark of "Free Lance" that horses are not indigenous to America, this being their first introduction, and that climate and locality, therefore, have not that influence over the hoof which they are commonly supposed to have.

The small horses of the irregular cavalry at the Cape, which took part in the battle of Ulundi, had no shoes on their hind feet, and few were shod even in front, but they held out longer and went miles farther than the shod animals: and no complaints were made of any of them falling lame, although, as "Free Lance" adds, "sheets of wet slippery rock and rolling stones in river beds would be calculated to try the hoofs to the utmost."

But it is scarcely necessary to cite more instances of the vast benefits which those who have had the courage to leave the feet of their horses as nature made them have received under the most varied conditions of work, of soil, and of climate. Humanity and self-interest here point in the same direction, and only folly of the most perverse kind will have the hardihood to fight for the maintenance of the existing system. The cruelties practiced (whether unwittingly or wantonly) on the horse's foot have been extended over a series of generations, but the only penalty which remains to be paid for the ill-doing of years is the surrender of a few days or a few weeks of the labor of the animal which has been thus misused. On the other side, there is a certainty that we shall be entering on a course which will triple the length of time over which the efficiency of the horse will be extended, and which therefore will, within twenty years, have saved the nation a hundred and thirty-five millions sterling. It will further ensure the immediate saving of all the money now spent on farriery, and this saving, which must be at the least forty shilings a year

on every horse, will amount to two millions and a quarter; and there will be the further saving in straw as well as on medicines, nostrums, and remedies no longer needed for animals rescued from a system which was a fruitful source of discomfort, disease, and death. The angry controversies which the subject is now constantly calling forth and exasperating will at the same time disappear. There will no longer be an outcry for uniformity in the system of paving towns, for horses will go as well on one kind of pavement as on another. There will no longer be querulous demands on inventors for the devising of a perfect shoe, because it will be clearly seen that this perfect shoe has been furnished already by nature, and that it is only human ignorance and conceit which has marred the work of God. We may now look back with some feeling of envious regret on the wiser, because more natural methods of the ancient world; and future generations will look back with feelings of simple wonderment at the infatuation which could submit without a struggle to a system which doomed the horse to unnecessary disease and agony and to a premature death, while it deprived his owner of wealth often sorely needed for his own welfare and that of all depending on him. Of the ultimate issue there can be no doubt; but it is still the duty of "Free Lance," as of all whose eyes are opened to the mischief of the existing system, to fight the battle to the end.

AGAINST HORSESHOEING.

THE New York *Tribune* says: "Colonel M. C. Weld's noteworthy views on the abuse of shoeing horses, as lately expressed in the *Tribune*, have attracted deserved attention abroad as well as at home, and called out another striking statement of favorable English experience, the points of which we quote from *The Mark Lane Express* :

"About three years ago, I was led to give the non-shoeing system a fair trial, commencing with a pony constantly driven, and extending the experiment to the young farm horses, all of which had, however, unfortunately been shod before the trial began, and am now able to endorse the observations of Colonel M. C. Weld in almost every particular, except as regards traveling on paved surfaces, as in Southampton, where there is a tramway, it is found that the pony prefers the paved stoneway to the macadamized part on either side. The time that elapsed before the "dead horn" of the hoof grew out was six months, and it was fully eighteen before the insensible frog lost its callousness and grew soft, like strong india-rubber. The pony does not work on the farm, but goes out nearly every day, the greatest number of miles run in any one week being eighty and in any one day thirty-two.

"Before the shoes were removed it was somewhat of a "daisy cutter," had been down once or twice, and stumbled much going down hill ; since discarding shoes it has never stumbled once, and I have driven

it full trot down a hill covered with snow and ice. This pony had been shod up to seven years old. The farm horses are young and strong, and have been bred on the place, and though mostly employed in the fields, are frequently engaged in hauling corn, timber, bricks, or manure, for home or hire purposes. No roads than those around Winchester can be more trying, repaired (!) as they are with flints, which have been broken just enough to make them cut like razors, and are a cruelty to horses shod or unshod. I find no difference in the capability of drawing full loads. There is no stamping in the stable or when standing out; over asphalt or icy pavements there is no slipping; the feet do not ball up over snow.

“The great drawback is that against which all who try any new groove have to contend, namely, the unyielding prejudice of all classes, more especially those who have to look after the horses, who, rather than aid in any change, will throw every obstacle in the way; but to my brother farmers I say emphatically, the man who cuts the frog of or shoes his young horse is committing a great error. With a little care at first you may work them on roads or fields; the animals will be certainly happier and probably healthier, and yourselves be in pocket by the change, and, with an occasional rasp the appearance of your horses will be far better than the torn, jagged, heavily-ironed and nailed feet of one-half the wretched animals it is painful to see about the country.’ ”

SOUND VIEWS ABOUT HORSESHOEING.

BY COL. M. C. WELD.

MESSRS. FOWLER & WELLS:

Gentlemen.:—I thank you for showing me the essay by Sir George Cox, which I have never seen entire before, and also the article clipped from the *Mark Lane Express* (London), which so pleasantly endorses my views upon the subject of driving horses barefoot. I do not know that I can add anything of special value to what you already have and propose to publish, but offer the following

NOTES FROM MY OWN EXPERIENCE.

It is now about fifteen years since I began to *reason* about horseshoeing. Like other people, I suppose I thought shoes a necessity, of course. Of course! That is the natural rut we get into,—thinking: “Everybody can not be mistaken.” The blacksmith was my oracle. He is the oracle of everybody who owns horses and does not have notions of his own. He cut as he pleased, and burned as he pleased, and shod as he pleased. The horses had thrush, and corns, and contracted heels—*of course*. Everybody’s horses are liable to such troubles—they caulked themselves, overreached, interfered but rarely, and then reshoeing

remedied the matter. It was all right and to be expected—*of course*, and perhaps necessary (?).

I began to read and found little to the point, but stopped the paring of the frog absolutely. Then I became acquainted in a business way with Mr. Goodenough, the inventor of the form of shoe which bears his name. We reasoned together, and I learned something. I began to use Goodenough's shoes put on cold, and found it difficult to get smiths to put them on well. This led me to the conclusion that I could drive a nail as well as a blacksmith's apprentice; so I soon became the possessor of a "draw knife," a rasp, a pair of pincers, and a good horseshoeing hammer. These, with the tools about the barn and house and a few sets of Goodenough shoes, were my stock in trade, and with my man's help I shod my horses for a full year. On one horse a single set of steel winter shoes wore, with only two resettings, from January to August, nearly eight months. They wore very evenly and thin, and finally one broke in two, and I pulled them all off. The hoofs were trimmed, and though unshod for a while, did not break much. After about two weeks we thought the fore feet showed a little tenderness, and they were shod. The hind feet wore well, and were in splendid shape. The other horse had his hind shoes removed, and this cured the thrush which was in them, and before winter he had a new pair of frogs—sound and large.

After this experience, every spring for some years I pulled off the shoes all round, kept the feet trimmed, and let them *wear* into good shape, and as soon as

they were well worn down, say in three or four weeks, had the front feet shod, and I learned to have the old shoes reset if they would hold the nails, and to have this done *as seldom as possible*. This does not mean that the shoe was left on till it came off of its own accord, but so long as the horse seemed to stand and travel well, the shoes were not set back.

I had four colts, and about this time began to train and drive them. Those that were old enough were used daily on the road, never being driven more than eight to ten miles in one day, and rarely that. A friend dropped the remark, "If your colts have good feet you will not need to shoe them until they are five years old." I was already beginning to regret the necessity of having them shod, for after I had found out that I could do my own horseshoeing, I was glad to have the smith do it—if he would do it my way; and he was glad to put on even Goodenough shoes.

I did not have the colts shod, and found out that it takes a deal of use, even in soft wet weather when the hoofs are easily worn, to wear them down so that the feet are tender.

I began also to let the old horses go barefoot. They were used chiefly on the farm (as we had the colts for driving), and before long, say within three months, their feet were in beautiful condition—round, solid, with big frogs and broad heels, and besides, the fresh growth of horn around the coronet was so healthy, smooth, and uniform that it was a pleasure to see it.

The following winter was quite open for this latitude, and we used four horses, on the farm, in the wood lot, and on the road, all unshod throughout the season. Horses fairly on their feet (that is, with tough hoofs, not weakened by nails, and the influence of shoes) will travel without flinching in the least over the hardest and roughest frozen ground or broken stones, provided they are a little used to it. A barefoot horse will not "ball" in soft snow and he will stand up on smooth ice. So as the horses went through the winter so well, and neither spring nor summer made me change my mind about the principle involved, I approached the next winter with confidence that I could drive the horses barefoot that season too. I was too sanguine; the ground froze early, the roads wore down as smooth as a barn floor; there came a storm in January of mixed snow and rain followed by extreme cold, and the whole land was a sheet of ice. I thought about how Mr. Bowditch had galloped on the ice with only a "toe-clip," and started out boldly. My horse did not fall, but he was in mortal fear of falling and I was proportionately uncomfortable. I tried the matter well and gave it up, had the horses shod and they went free again, except when a soft snow fell upon the ice; then with snow two or three inches thick packed in balls below their feet they were worse off than if barefooted.

I am entirely satisfied that it is best to use shoes in icy weather, and in fact in winter weather generally. The disadvantage is that the hoof walls are hurt by the nails—but then I have the nails driven very close

to the edge of the horn, which is surprisingly tough. The growth of new horn is not checked or essentially affected, because we have so much snow and our country roads are so rough that there is frog-pressure enough to secure a good growth of horn. When we pull the shoes off in March or April a single paring removes most of the split and damaged horn, provided the nails are driven close enough to the edge.

An unshod horse in winter will not pull half a load even on reasonably rough roads. He may go well for miles, but may then come upon an icy spot that he can hardly get over. On smooth icy roads an unshod horse, though much better off than one with smooth shoes, can not travel with the freedom and confidence in his footing that is essential to the comfort and safety of the driver, and especially so to the rider.

Of late we have had more horses than we needed, owing to our repugnance—in fact, determination not to sell a faithful old family servant when too old for much work; so we have seldom worn any of our horses' feet off on the road to that extent that they went tender. It has occurred in two or three instances, however, and it is always likely to occur to whoever drives his horses barefoot. The remedy is simple: put on "toe-clips," "half-moon shoes," or what Sir George quotes Mr. Bowditch as calling "merely a small bit of iron, four inches long, curled around the toe." This is chiefly necessary for the fore feet of driving horses; but horses that pull heavy loads need this device on the hind feet also

The toe-clips should be made to take well hold of the ground and should be thinned down at the ends.

If a horse should come home from a journey sore, and with his feet perhaps worn to the quick and bleeding, give him a week's rest before shoeing—turning him out when the grass is wet with dew, or give him the run of a swampy piece of ground. This will do his feet more good than any other treatment, and then put on toe-clips.

Since driving barefoot I have never had a "sand crack," a broken or split hoof, "quarter-crack" or anything of the kind and no trouble of the feet whatever, except when worn down as explained. Even the old horse, 24 years old, has feet as round and sound as an unshod colt.

Thanking you for this opportunity to aid in promulgating sound views about horseshoeing,

Truly yours,

MASON C. WELD.

NEW YORK, August, 1883.

THE TRAINING AND CHARACTER OF HORSES.

The following from a recent number of that useful and practical publication, *The Phrenological Journal*, will be found of interest, and suggestive in the selection and management of horses:

“Of our domestic animals none occupy more attention than the horse, and altogether there is no subject with which general society is supposed to be more



Fig. 1.—HIGHEST TYPE OF INTELLIGENCE.

familiar, yet when it is a question of positive knowledge for a given purpose very few are able to meet the case—even among farmers and stock raisers we would scarcely find two who would agree entirely on the training or education of a horse having a certain trait or disposition. On the farm the treatment of this most useful companion of man is for the most part irregular, injudicious, and very often absolutely

cruel; and the wonder is that the colt develops into a condition of docility, patience, and usefulness, which is rather typical than otherwise of the horse generally. With his highly organized brain, sensitive temperament, great strength, capabilities of resistance, the horse by appropriate training could be rendered much more efficient than he averages. This is shown by occasionally meeting with a noble specimen of the equine family which has fallen into considerate hands, and the capabilities of intelligence in such a case are astonishing, and the sarcastic remark which is often heard, 'That horse knows more than his master,' seems warranted. The deficiencies in horse-training generally arise from a lack of understanding of the nature of the animal, and without such an understanding it is impossible to set on foot a system which shall be definite and efficient. Mr. Dennis Magner, whose reputation as a horse-trainer is very extensive in this country, states that 'There are three natural difficulties which present themselves in the outset of a horse's education. First, the horse is much stronger than man, and this fact the animal is intelligent enough to perceive very promptly; and if he can impose it to improper treatment he is likely to do it and thus resist the control of his master, and whatever gain there is on his part in such resistance, encourages him to further impatience of control, and finally he may become unmanageable and vicious.

"The second difficulty arises from his methods of reasoning, which must be intelligently exercised so as to prevent his becoming excited or frightened at boys

and sounds with which he is brought in contact. Through his active senses of sight, hearing, and feeling he must be instructed with regard to their innocent character.

“Third, it must be appreciated that a horse can not understand the meaning of language or words of command, except so far as he is taught to associate them with actions; consequently, it is not to be ex-



Fig. 2.—VICIOUS AND TREACHEROUS.

pected that he will know what he is required to do unless taught and shown in a way that he can clearly comprehend. We see, for example,' says Mr. Magner, 'that if a horse learn to pull away, break his halter, resist the blacksmith in shoeing, or run away, he will be encouraged to do so afterward, and the habit may become fixed. On the other hand, when a colt is first haltered, no matter how hard he may resist, if compelled at length to submit, he will be likely not only

to follow without restraint, but will continue to do so afterward ; also when the feet are taken up and handled until an operation is quietly submitted to, or such restraint is brought upon the mouth as will overcome the power of resistance, he will not only submit for the time, but if the teaching be applied properly, inclination to resist afterward will be quite overcome.'

- "The principle of this reasoning applies as well to other habits of the horse. Like all other animals of the herbivorous kind, he is naturally subject to the domination of man, and so susceptible to training; this subjection is illustrated in every type of horse, it does not matter how wild or vicious he may be, if his treatment be such as properly considers organization ; in other words, is founded upon a thorough understanding of the horse nature. Having become once impressed by the superior power of his master through the element of fear, his fear overcome and supplemented by kind treatment he will not only exhibit submission without the use of force or restraint, but he will remain so if not abused or excited. The horse is ever subject to disturbance by the occurrence of unusual sounds, especially those which arise from something in contact with his body, and in this case a noise, especially if suddenly made, is likely to excite intense fear or resistance, and he will be likely to be afraid of it ever afterward. A new object should be brought slowly and gently to a horse's notice ; he should be permitted to smell and feel of it, then it can soon be placed on or around him without causing the least fear. It does not matter whether while in harness the

cross-piece falls across the quarters, or an umbrella is raised behind or the whistle of a steam engine is heard, if the horse have been shown or introduced carefully to these things, he will not be seriously disturbed by them; whereas their sudden occurrence may be productive of most dangerous and persistent effects.

“Third, in relation to teaching the meaning of the sounds or words of command, using the language of Mr. Magner, ‘it is evident that if a man were to sit on

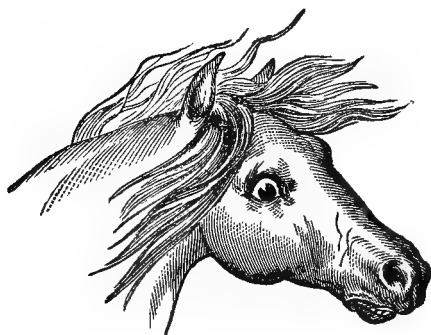


Fig. 3.—WILLFUL AND SPIRITED.

a block and simply read the word *whoa*; to a horse, he might do it indefinitely without teaching him its meaning; but if a horse were moved, set in moderate action, and immediately after the command the reins were pulled sufficiently hard to make him stop, he would after a few repetitions of the command learn to stop, and that without the reins being pulled. Or in teaching to *back*, if after the command were given the reins were pulled upon sufficiently to force him backward, he would after a few repetitions learn to back

freely of his own accord at the word, to avoid the unpleasant effect of the pulling.'

"In further illustration of this principle, Mr. Wagner goes on to say how a horse may be taught a few tricks. If it is desired to teach a horse to make a bow, for instance, first prick him lightly on the back with a pin, and repeat this until in his efforts to avoid the annoy-

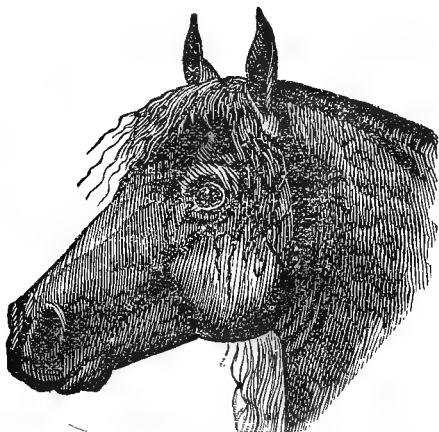


Fig. 4.—DOCILE, KIND, AND INTELLIGENT.

ance he drops his head, then instantly stop the pricking and caress him; repeat the pricking until he has again dropped his head, then caress him and give him something of which he is fond; continue this method until at the instant the motion is made toward the back he will drop his head. To teach him to kick up, simply prick him on the rump until there is an inclination to kick up, when, as before, stop and caress him; so repeat until the least motion toward the rump leads

to the effect desired. Teaching any kind of trick the principle is the same, the difference being only that instead of a pin other means suitable to the case must be used. To teach tricks by the word would be necessary to repeat the command and associate the act with it. Care should always be taken against confusing or exciting the animal, and but one trick at a time should be impressed upon him, the process being care-



Fig. 5.—EXCITABLE AND OBSTINATE.

fully and slowly repeated until no mistake is made. Of course, as horses differ much in intelligence, some will acquire their lessons more promptly than others, and more can be expected in the way of performance from some, to have prompt obedience at the word of command. Such an animal as the one in the illustrations (Fig. 1 or Fig. 4) can be readily taught to do unusual things. For the execution of any trick or movement the exact signal or word which it is customary

to give in teaching it should always be repeated; the tone or pitch of the voice should be carefully regarded, otherwise the horse may mistake on the instant what is wanted of him, and consequently be unable to obey. Such an animal as that in Fig. 3 or Fig. 7 would test the patience of any trainer; bad habits, cunning, and vicious action are to be expected from such a physiognomy. But the defects of organization in such animals are usually increased by bad treatment.

“The principle of kindness in training is potent in relation to a horse just as it is in relation to our influence upon our human brothers. If a man, for instance, were strong enough to take a bully by the shoulders and shake him so thoroughly as to show him that he had power to control him as he pleased, and then afterward treat him with kindness, the effect would be far better in establishing a relation of friendship and subservience on the part of the bully, than if the latter were merely impressed that he was kept under, or subjected by dint of the superior force of the other; in truth, it is not likely that the rough fellow would maintain a very pleasant feeling for his superior, if the contest were carried on in the presence of others, so that his self-respect were affected, his low jealousy aroused. If a man could control a horse by putting his arms around his body, and thus prevent his struggling and becoming excited, and until the muscles were entirely relaxed, and then further win his confidence by kindness, caressing and so on, the subjugation obtained would be of the most efficient kind; but as there is not strength enough in human nature to

do this, recourse must be had to such means as will approach as near in principle to it as possible. If the horse be given such freedom as to encourage his confidence in resisting, or if his willful, vicious nature be stimulated by ignorant, abusive treatment, and he should in his excitement and fury resist earnestly, despite of the most severe punishment, it is no more



Fig. 6.—SLOW, DULL, OBTUSE.

than should be expected, and at the same time we would have a manifestation of the real cause to be overcome by our treatment. The manifestation proceeds from a condition of the brain just as mental phenomena in man arise, and this condition has been produced by erroneous treatment; and to secure the desired result of submission a method must be put in operation for the production of a different mental

state; the fear of the animal must be checked and modified, and his confidence and good-nature gained. In the meantime strong physical means of control are legitimate as a temporary expedient, so as to secure that mental state which will lead to success. If he has been unduly stimulated by fear, then the horse should be shown that there is no cause for fear; if through certain qualities of viciousness, then those qualities should be modified through measures which shall calm and soothe the brain excitement which produces them. Kindness will accomplish much even with a stubborn, willful character like Fig. 3. We should always give a horse some credit for reason and allow him a little latitude as it were for reflection. Treating him much as a child whose disposition we understand, will have a similar effect.

“The reader who is familiar with horses will recognize in the illustrations traits of horse physiognomy frequently met with. Fig. 1 shows the type of intelligence, high blood and docility; while Fig. 2 (from life) indicates the vicious and treacherous type, the animal against whom it is well to be wary. Fig. 3 is an animal that will tax the strength of his owner to keep in training. He is spirited, excitable, and ‘off the handle’ often. Fig. 4 is a good fellow, docile, yet possessing spirit and intelligence—the horse for the family that will be kind to and appreciative of him. Fig. 5 requires a gentle, but strong hand. A ‘high-strung,’ nervous fellow is he—needing no whip or spur, but will ‘go’ while he can stand. Fig. 5 is a very sensitive animal; flies and mosquitos annoy him

greatly; his skin is thin and his blood hot. In Fig. 6 we have a specimen of the heavy, dull, stupid horse; the one that 'any one can drive,' but is rarely driven off a walk, or a very sluggish infrequent 'lope.' He's the horse to try the patience of a saint, when a little behind time for the train. Fig. 7 requires an exceptionally good driver to manage him; he must be watched or some dangerous trick of his may suddenly



Fig. 7.—VERY EXCITABLE AND INCORRIGIBLE.

astonish his owner. He'll nab the unwary bystander on the shoulder, or perhaps seem disposed to make a brief luncheon of his hat. He has a wild-looking eye, and the head-lock falls in an unsteady corkscrew way down over his forehead, in itself suggestive of untrustworthiness. Compare Figs. 1 or 4 with Figs. 2, 5, 6, and 7, and see how wide the differences of character shown even by engravings.

APPENDIX TO SECOND EDITION.

THE PRINCIPLES ADVOCATED THROUGHOUT THIS BOOK INDORSED BY PROF. KNAPP, OF THE IOWA IMPROVED STOCK-BREEDING ASSOCIATION.

[From the *Tribune* of Nov. 3, 1883.]

HOW TO RAISE HORSES.

To bring colts to maturity best prepared for many years of usefulness, was a question considered by the Iowa Improved Stock-Breeders' Association. Prof. Knapp said that overfeeding these animals costs the people of the State not less than \$15,000,000 per annum.*

"Two quarts of oats and two ears of corn twice a day is liberal feeding, but the colt would eat twice as much and not be as strong. I have tried it over and over again; I challenge the world to that contest.

* Prof. Knapp's estimate of the cost of overfeeding included, it is to be pre-umed, the injury to health, lost time, and premature death of horses thus treated. Fully a quarter of a million infants (to say nothing of children and adult voluntary gourmands) are stamped out of existence every year in this country alone by this same process. That is, the combined influence of overfeeding and under-exercising (infants being held and wheeled constantly instead of being largely left to their own resources something like other younglings), makes fat, soft (*i. e.*, "ill-conditioned"), and, consequently, short-lived babies.

See the author's work on Infant Dietetics, "How to Feed the Baby," by C. E. Page, M.D., pages 180, price 50 cents. New York: Fowler & Wells.

(151)

Giving more grain makes rapid growth, but is like stuffing an animal for market. When you desire to produce horses for endurance or breeding they must be matured more slowly. Barrenness, when existing, is produced nine times out of ten by this stuffing process. It ruins the health of stock of all kinds."

Interesting facts to the same effect were presented by Mr. Wallace, who makes it a point to spend a month once a year in Pittsburg, a noted market for horses :

"I have gone among the liverymen and railroad contractors and teamsters—men who use the heaviest kind of horses and put them to the hardest kind of work—and asked them where they get their horses and which kinds they prefer. Said one gentleman : 'We used to get our horses from Kentucky ; but now these Kentuckians have got in the habit of pushing their horses too fast ; after the manner of pushing beef cattle. We want a horse that has grown on hilly ground somewhat rocky, with a limestone soil. We want him kept until he is three years old with a good fair diet, plenty of exercise, and not kept closely in the barn. Otherwise we are obliged to keep them a year before they are able to stand any work.' "

RUNNING DOWN ON TWO MEALS.

A friend who became very much impressed with the alleged advantages of the two-meal-a-day system, gave it a trial with his own horse, and came near abandoning the experiment as a failure. His horse

“began to run down,” as he said, “and became quite seedy”; so much so that the experimenter grew ashamed of the animal’s appearance. There was in this case no question but what the amount given was liberal enough (unless his own stable-man deceived him—which he felt sure was not the case), but the truth in the matter was simply this: the horse was fat. His work had been light, and his diet heavy. Accustomed to his over-liberal feed every five or six hours, he had become really unsound throughout, as explained on page 21 (“A Soft Horse”). He had to be built from the ground up, as per examples on pages 17–20–24–25, or else remain as he was, unfit for hard service and predisposed to sickness. He finally worked the case out successfully. With horses that are and have long been “out of form,” *i. e.*, pretty thoroughly degenerated (and the older the creature and the longer he has been thus diseased, the worse for him), any radical change—whether increase of work, decrease of food, or less frequent meals—would speedily “show them up”—expose their real condition; but if the regular daily exercise is maintained no animal will shrink in muscle, however much he may in weight. He has, we will assume, taken on (and in and through) himself a large amount of fat, because overfed and underworked. His muscles are honeycombed with fat; but being stimulated with a meal every few hours he maintains an appearance of strength, as, on account of fat, he does of condition—can travel sharp and strong for a short distance. If sent on a long journey he is used up for several days.

Put him to hard, steady work and he will possibly pass through the "seedy" stage, which is, nevertheless, a curative stage. At first he acts weak—he is weak—but the effect will be, if the new regimen be persevered in, to prevent the possibility of distemper or other forms of disease which would very likely "attack" him, sooner or later, if continued on the old regimen; and in a reasonable time (depending upon the degree of his disease, natural constitution, and the discretion or tact of his trainer or attendant) he will be in every way improved. Speaking from a worldly-wise stand-point, it may be said that if a man owns a fat horse and wants to sell him to the best advantage, he should find a fool and sell. If, on the other hand, he has a naturally fine animal disordered in this manner, and desires, for his own satisfaction or use, to make him trustworthy, there is but one way to do it, viz.: to inaugurate a system of regular and tolerably hard service, and, of course, give him enough to eat, whether at two or three meals a day. At the same time, if his fat horse is satisfactory as he is; if he never expects to have occasion to make any sudden heavy demands upon him, in the shape of long hard drives; if he doesn't want the bother of remodeling him, preferring to take the chances of his getting sick and getting out of it without serious inconvenience, why, he had best keep right along in the old way.

ST. JULIEN AND JAY-EYE-SEE.

A "POINT" LEARNED TOO LATE FOR THE GOOD OF
"THE OLD HORSE": IMPORTANCE OF HARD WORK
(SEE PP. 19-77).

On the day before the great race at Fleetwood between these famous horses, the *Sun* printed the following :

(The day before.)

"JAY-EYE-SEE ARRIVES, LOOKING TIRED.

"Jay-Eye-See, Mr. Case's wonderful little five-year-old, left Boston on Wednesday night, and arrived at Fleetwood Park at 8:40 o'clock yesterday morning. He looked tired. He had been shipped here after trotting a hard contest, and had had no rest. Edwin Bithers, his driver, remained in Boston to drive Phallas. Mr. Case will be here to-morrow morning.

"Of St. Julien's chance in the great trot, Hickok said :

" 'I don't believe the old horse can be beaten on this track on Saturday. He is working well, and *I have not yet sent him to the top of his speed.** The fastest miles I have given him here were in 2:14 $\frac{3}{4}$, and 2:15 $\frac{1}{2}$, and yesterday I *jogged him a mile in 2:17.*' "

"The betting on the trot is at the rate of \$100 to \$60 on St. Julien to win. It is believed that 10,000 persons will be present to see the contest."

It was my belief, and I said repeatedly on the day of

* The italics are my own.

the race—predicting the result—that Jay-Eye-See's hard work of late would ensure him a victory. If Mr. Hickok had "sent St. Julien to the top of his speed" frequently for weeks before this race, instead of being content with fair work and "jogging," he would have given the little Westerner a harder task.

On the day after the race, viz., Sunday, September 30, 1883, Mr. Hickok seems to have thoroughly learned the advantage of plenty of work "to stay up the muscles," according to the following from the same paper:

(The day after.)

"ST. JULIEN AND JAY-EYE-SEE.

"Mr. O. A. Hickok, part owner and driver of St. Julien, said yesterday that his horse was short of work to stay up his muscles. 'What I mean by that is,' he said, 'that he hasn't had a hard, bruising race this season, where he was put up to the top notch by such a steady horse as Jay-Eye-See.'"

What makes such horses as this? This is what made Jay-Eye-See; and the same combination will make others like him: To begin with, he was "born so"! Who was his father? Who was his mother? Who were his grandparents, on both sides of the house? This is what makes the possibilities, the probabilities, indeed, if not the guaranty, of kind, handsome, vigorous and able men, women, horses, or any other creatures. Inheritance of a high order—nothing else is certain. Like produces like. Second: He fortunately came into the possession, at an early age,

of a man who, if we may be pardoned the egotism, knew just what this book aims to teach, so far as concerns the absolute necessity of plenty of hard and sharp exercise in order (having the stuff to work on) to develop the growing animal in the best possible manner, and having thus developed him, to keep him in condition. There is, in the rearing of colts, occasion for the use of much discretion, but nothing is more certain, to my mind, than that many a good horse is spoiled from overfeeding and underworking during the growing stage. He should not be a fatling, a soft-shell, during this period, nor ever after.

THE ONLY WAY TO DO IT.

Hanlan, the oarsman, works very hard. "I have traveled thirty miles to-day," he is quoted as saying, "and all with my own wind and muscle. I went about twenty of it in my boat, and the rest on my legs. Oh, no; that is not exceptional. I do as much as that every day, from early in the spring until late in the fall. You see my races are rather frequent, and it is necessary that I should keep myself constantly in perfect condition. I am, therefore, in training all the time. My diet is always as carefully regulated as though I was to pull a race next day." Hanlan never drinks a drop of alcohol in any form.

FLAT-FOOTED OPINION ABOUT NON-SHOEING.

H. Reynolds, M.D., of Livermore Falls, Me., writes to the *Sun* as follows:

"MY EXPERIENCE WITH AN UNSHOD HORSE

"There is no doubt that some horses may be driven over our common roads daily for months, and perhaps years, without being shod. In September, 1882, I bought a mare whose hind feet were not shod. She had raised a colt, and had been running in the pasture all summer without being shod. Before I purchased her she had been shod forward. Thinking it a favorable opportunity to test the question of allowing horses to go unshod, I determined to try the experiment. This mare I used in the practice of my profession as a physician, driving her daily from September till some time in March, when I traded her for another horse. During this time I had no shoes put upon the hind feet. I drove her over hard, stony, dry roads, muddy roads, frozen and rough roads, and on snow and ice, and her hind feet never failed her, nor did they suffer for the want of shoes. The hoof seemed to grow as fast as it wore away. Around the rim of the hoof there was a hard ridge of horn, beveled by use both on the inside and outside, completely taking the place of a shoe. This horse did not 'ball up' when the snow was soft, nor slip on the ice more than any other horse which was kept well shod. It is true it was a favorable winter as to ice, there being very little of it in the roads. My experience with that horse convinced me that an unshod horse could endure as much driving on ordinary country roads as a shod horse. Whether all horses could do the same is another question. Undoubtedly there is much dif-

ference in the hardness and toughness of different horses' feet. Some, perhaps, would require shoeing, while others would not. If I had a colt which had not been shod, I should drive him without shoeing until I saw that he needed shoeing.

“USING FARM HORSES UNSHOD.

“Many if not all farm horses might advantageously go without shoes, at least during the summer months. As the experience of those who have tested the method is of more value than any mere theorizing, let us hear what a Michigan farmer says in a communication to the *Tribune* on this matter. He says: ‘For fifteen years I have made it a practice to take the shoes off of all my horses when beginning spring work, and let them go barefoot until fall, and I find that they can do all the farm work as well as when shod. I have no trouble about driving on the road, except when drawing heavy loads up slippery hills; if hills are dry, I know a team can draw as heavy loads barefoot as when shod, and I think a horse can travel easier and better on good sleighing without shoes; but in this part of the country there are apt to be so many icy spots during the winter that I keep my horses shod then. . . . I have never had a horse with bad feet since letting them go barefoot in summer, and when they are shod their shoes stay on much better than when I kept them shod all the time.’

“A CONNECTICUT FARMER

who had tried working horses unshod says: ‘I find they work better, more sure-footed, and are far less

liable to lameness than when shod, and I am well satisfied that horses' feet, as nature made them, are all-sufficient for ordinary work, and, I believe, for extraordinary work. After my long experience, I should now as soon think of going to a farrier myself to be shod as to send my horses for that purpose. What surprised me most was that one of my horses was continually falling lame, and we never could discover the cause; but since she has been worked without shoes she has never shown the least symptoms of lameness, and never stumbled, which she did very much when shod, from which I infer that the paring the soles when shoeing made her feet very tender, and was the cause of all the trouble. Our roads are rough, hilly, and stony, much more so than average roads, so that my success can not be attributed to superiority in this respect. Equestrians would find it far safer to use horses without shoes, as the sole becomes so hard as to be non-sensitive to small stones, and the animals are thus far less liable to stumble.'

"HOW TO MAKE THE CHANGE.

"Horses which have been accustomed to wearing shoes can not be driven on hard roads without shoes until the hoofs have had time to grow out and be prepared for the change. If the horse can be turned out to pasture a few months, the hoofs will have ample time to grow out and become adapted to the change. In two months a horse can, with care, be brought into readiness for use without shoes. In re-

gard to this method, Col. M. C. Weld says: 'The shoes should be left on as long as they will hold, in order that when taken off there shall be a wide rim of horn all around the hoof to be cut away. This would otherwise have to grow out before it could be removed either by the knife, by the rasp, or by wear. Then the horse should be turned out to pasture or used only for farm work. Every few days his feet should be examined, and rasped off if necessary. As the wall of the hoof grows and wears, the extreme outer edge all around will be level, or nearly level, with the inner edge of the wall. . . . The first changed appearance of the hoof that will be noticed after the shoes are removed will be the growth of a healthy rim of new horn, seen under the hairs of the coronet; next, a widening or spreading of the heel and an enlargement of the frog. It takes a full year for the whole hoof to grow out and off; consequently it takes nearly that time for a contracted, high-heeled, frogless foot to assume its normal form. In the winter a barefooted horse will not ball and will not slip if he knows he is on the ice, and, if he comes upon it unawares, he gets his footing almost immediately. I have never had a horse slip badly even on ice covered with snow. The danger is not to be compared with that to a shod horse with snowballs attached to each foot, coming upon an icy spot, as often happens. If heavy loads are to be drawn, shoes with calks are needed, especially in starting and going up icy hills. For general driving in the country, for farm use, and for ordinary road use, when the labor is not severe,

unshod horses are safer, sounder, pleasanter to drive, and more economical than if shod. Stumbling rarely occurs. Cutting, interfering, overreaching, and forging never.'

"A LARGE PART OF THE SHOES MIGHT BE DISPENSED WITH.

"In view of the testimony advanced in favor of unshod horses, it is evident that many of our horses might go without being shod. All such as are troubled with stumbling, interfering, overreaching, forging, contracted feet, corns, and other affections incident to shoeing, certainly could advantageously be allowed to go without shoeing.* Colts which never have been shod should not be shod until there seems to be actual need of it. Work horses used for drawing heavy loads will probably require shoeing in winter. On the whole, it seems probable that the larger part of the horseshoeing might be dispensed with, and the horses would prove as serviceable at least as at present."

The London Live Stock Journal, commenting upon the subject of

THE SHOELESS HORSE,

says :

"Mr. R. A. Luck's horse, entered into the tradesman's class at Darlington, for the purpose of allowing persons interested with the question of the shoeing

* *Query*: If such animals can be improved, perhaps cured, by taking off their shoes, is it not probable that such disorders would be prevented by the same means, or by never beginning the practice of shoeing ?

of horses the opportunity of inspecting the feet of a horse that had done hard work on macadamized roads without shoes, attracted considerable attention. Experienced farriers, huntsmen, farmers, tradesmen, and gentlemen were to be seen in groups round the horse all the afternoon, critically examining its hoofs. The curiosity evinced was not surprising, nor the skepticism with which the various inspections were made, and not less noticeable was the general astonishment and wonder expressed at the remarkable results of Mr. Luck's experiment. It is so universally believed (says *The Darlington Times*) that the shoeing of horses is absolutely necessary, that it appeared almost incredible that an animal which had been unsound in its feet could be made sound by abandoning shoeing; and more than this, that it could, after nearly a year's regular work over country and town roads, show such perfect hoofs. The development of the feet was a constant source of wonder, and Mr. Luck, who courteously explained the circumstances of the experiment, must have been somewhat wearied at having to explain in detail so often how he had succeeded. It is no exaggeration to say—indeed, it was admitted by all who saw the animal—that no horse on the field possessed four sounder or better feet, and this simply by allowing nature to have her own way. No task is more difficult than to root out long-accepted ideas, and we can scarcely expect that a tithe of those who yesterday admitted the success so clearly demonstrated will forthwith abandon shoeing as an unnecessary practice; but wherever men interested in

horses congregate together, the subject will be a theme of discussion for the next nine days. Nothing more surprising was seen at the show, and not a few were convinced against their will that what they had hitherto regarded as impossible had actually been achieved. In many parts of the country we understand gentlemen are regularly working unshod horses, and with equally satisfactory results to those demonstrated yesterday, and doubtless ere long Mr. Luck will find many imitators in the north."

D. M. A. has this to say to the editors of the *Indiana Farmer* on

UNSHOD HORSES.

"There was a clipping in the *Farmer* a few weeks ago, saying that they wished that some one would perfect a breed of horses that could work without shoes. We have such a breed now. If farmers would try it they would find that the most of our horses can go without shoes, and have better feet than those that have shoes. I have had but few horses shod for twenty years. In that time I have not had a lame horse. The only time we need shoes is when the road is icy, and then, if the shoes are not sharp, a horse will slip more than if they had none. I have had Clydesdales and other horses, and any of them can travel twenty-five miles on a gravel road and never flinch. A horse's feet are like a person's; if they are kept shod the foot becomes brittle and tender. If not shod they become hard and tough."

REASON FOR SHOEING.

The only good reason for shoeing a horse is that he has been shod. This is about as valid as the analogous excuse for a man's drinking whiskey. The man who has taken his regular "nipper" every day would be hardly fit for business for some days, weeks perhaps, after breaking off from the practice. Nevertheless, he had better break it off. No horse that has been long abused with iron shoes, and the paring and coring submitted to at the hands of even the most reasonable, or rather the least unreasonable, blacksmith retains anything like the natural foot in shape, or fitness for hard work. To take off his shoes and continue his regular work would (supposing this to be severe, as in the livery, for instance, or hard pulling over ordinary roads) result in great temporary inconvenience; although he would come out ahead finally. But whenever it is practicable to "favor" them (more or less, and for a longer or shorter time, as the case may be) there will never be found an instance of failure to accomplish a great and permanent benefit by taking off the shoes "for good."

Thus far we have dealt very little in theory; but have shown that, in *practice*, the less shoeing the better: *i. e.*, the lighter the shoes, the more closely we hold to the "tips" when any irons are used; the longer the barefoot season (if resort must be had to shoeing at certain seasons or under certain circumstances), the better it will be for the horse, and, con

sequently, for his owner. It may not be amiss, however, in closing the discussion, to insert here

A LITTLE THEORY.


The following from the *American Cyclopædia* will be of interest to all who wish to do for themselves a little "reasoning after the fact":

"The hoof of the horse presents an admirable adaptation to secure solidity and elasticity in an instrument of progression; the whole exterior horny covering, composed of modified epidermic structure, is a hollow cone truncated above, into which the coffin bone is received; highest in front, it gradually diminishes backward, where it is suddenly turned inward, becoming mixed with the sole, supporting the under parts of the foot, and protecting the sole and the frog from too rough pressure against the ground; this internal wall, called the 'bars of the foot,' by its sloping direction distributes the weight of the body toward the sides of the hoof, with whose numerous perpendicular horny laminæ interdigitate similar processes from the vascular surface of the coffin bone. In the triangular space in the center of the foot is an elastic horny mass called the frog, its base connecting the posterior curves of the hoof, the sides united with the bar, and the point extending about to the center of the sole; on the sides are deep channels, to allow of its expansion and render the foot elastic; its actual thickness in horn is not so great as farriers seem to think, from the freedom with which they use the paring knife; in

a well-formed foot, the base of the frog ought to occupy a sixth part of the circumference of the circle of the hoof; in the center of the frog is a horny conical cavity of considerable depth, which protects the partially cleft foot from further rupture, *adds to the elasticity, secures a firmer hold on loose soils*, and passing above into the substance of the sensitive frog serves to unite firmly the two halves of the foot, which are completely divided in ruminants; this horny cone has been called the frogstay or bolt. The sensitive frog falls into the inverted arch of the horny frog, which are thus held mutually in place and preserved from external shock. The sole is an irregular plate of horn, closing up the lower opening of the foot, of an arched form, abutting everywhere against the sides of the wall, another contrivance for securing elasticity. The foot of the horse, therefore, though solid in front, is partially cleft behind, so that the terms *solidungula* and *solipoda* can not strictly be applied to it; *indeed a solid, continuous, unyielding circle of horn would be very painful if not entirely useless as an instrument of active progression; this beautiful structure, however, is sadly interfered with in almost all methods of shoeing.* Immediately under the hoof are extensive cartilages, attached to the last two bones, protecting the upper part of the structure and adding greatly to the elasticity of the foot, and permitting the movements of the coffin bone within the hoof; *in old horses these cartilages may become partially ossified, and are then called ring-bones.* Under the hoof is also a very sensitive and vascular layer,

from which the hoof originates, analogous to the soft core of hollow horns and the matrix of nails."

AUTHOR'S GENERAL NOTE.

 The reception accorded to this book by horsemen and the trade, and the favor with which it has been received by agricultural and sporting papers, has been so phenomenal that no sooner was the first full edition fairly off the press than a second is demanded. I am especially glad of this, for it has given me the opportunity to thus speedily make a certain correction on page 40 relating to contagious diseases.

753 BROADWAY, NEW YORK, *Nov.* 20, 1883.

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